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# GLEANINGS IN BEE CULTURE

VOL 35

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NO. 3.



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T. Fred Robbins

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MEDINA, OHIO.

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# GLEANINGS IN BEE CULTURE

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## STRAY STRAWS

By DR. C. C. MILLER

LOOSE HANGING FRAMES when well made and in level hives "will hang true and plumb every day in the week," p. 94. But, friend Woodward, in this locality, as the frames grow old you may space the top-bars perfectly, and if you tip up a hive and look under you will find the bottom-bars at any thing but regular distances. [That is our experience.—H. H. R.]

B. CHASE says that witch-hazel bloom begins early in October and lasts about four weeks, being the last flora to bloom in New England. His bees get much pollen from it, and he thinks it might have given my late pollen. Possibly, although I am not sure that I ever saw any witch-hazel here. It has the unique habit of blooming late in autumn when the leaves are falling.

TO ACCOUNT for failure of clover-bloom to yield nectar, J. E. Crane suggests, besides the weather, soil. But, friend Crane, it was the same soil that gave me bumper crops in other years that gave me a failure in 1906, and the weather seemed to be all right. Was there some hidden weather influence, or have you some other guess? [It certainly looks as though the soil were not to blame in your case.—H. H. R.]

POWDERED SUGAR is preferred to confectioners', p. 99, as the latter "is apt to contain starch." Will the pure-food law eliminate the starch? [As I understand the law, it would not, for the reason that starch is not a deleterious substance. But all such

sugar containing starch will have to be so marked or labeled. From the standpoint of the bees, the starch would be very injurious, according to Mr. Morrison, and so the powdered sugar had better be used.—H. H. R.]

J. E. CRANE, page 87, counts about 2 cts. a pound for freight, commission, etc. About the same rate here in shipping 66 miles. Is Mr. Townsend's additional 2 cents for a longer haul? [According to our experience the actual amount deducted for commission, freight, cartage, etc., on shipments of honey sent to commission men can not be figured closely as applying to all markets; and for a moderate distance, say less than five hundred miles, the freight will be less of a factor than the other charges. We recently had occasion to inquire as to the amount of commission charged by well-known merchants in large cities and we find representative commission houses charging 5, 7½, 10, and even 15 per cent; and a complaint has come to us that the house which states that their commission was 15 per cent actually charged 20 per cent from one of our well-known bee-keepers to which he of course made vigorous protest. We have advice from several parties that in the absence of some agreement it is doubtful if there is any legal recourse. This emphasizes the necessity of a definite understanding of what shall be the fixed charges before shipping to any market.—A. L. B.]

PROBABLY 50 hives face south for every one that faces north, the idea being that the sun entices bees out to work. I suppose it is not so important to entice them out in the heat of the day as it is mornings and evenings. Did it ever occur to you that from the third week of March to the third week of September the sun shines into a north entrance in the morning before it shines into a south one, and that in the evening it shines into a north entrance after a south entrance is left in shadow? It may be well, also, to note that, for a number of weeks in sum-

mer, the sun shines into a north entrance an hour and a half before it touches a south entrance in the morning, with a like advantage to a north entrance in the evening. Is it better in summer to have a hive face north or south? [These ideas throw new light on the subject. But photography brings out the point that the sun, in the very early morning or in the late evening, is not nearly as bright as it is more in the prime of day. So, all things considered, when one hive is taken with another the year round, it is doubtful whether the direction in which the hive faces has very much to do with the amount of honey produced.—H. H. R.]

"WHAT AILS this granulated sugar? It is so yellow I am afraid there is something wrong with it," said my wife. "It's the pure-food law that ails it," I replied. "You ought to be glad to see it yellow, for that is because the manufacturer no longer dares to poison it by putting in blue coloring to whiten it." I remember one year, when feeding a large amount of sugar, there was a blue sediment in the bottom of the tub, that would go a long way toward bluing a whole washing. [It would not be bad if they used only bluing to make sugar white; but we are informed they use sulphuric or hydro-chloric acid to bleach it, and this is not always eliminated by the subsequent process. This is why white sugar injures teeth. Straw-colored sugar with large crystals possesses a rich sweet taste. The larger the crystals, the better it is. Molasses sugar, which is soft and moist, ought to be carefully avoided. It is made from the "dregs" of a sugar-factory. The pure-food law will stop it soon, however. The blue sediment referred to indicated that the sugar came from beets. Raw beet sugar has a bluish cast. Under the pure-food law sugar ought to be cheaper and at the same time better.—W. K. M.]

E. WESTPHAL writes me from Germany that the fireless stove ("Kochkiste" they call it) is coming into universal use there. Different makes can be found in the stores, and home-made ones are common. He sends me a pamphlet written by Elise Hannemann, *Vorsteherin vom Haushaltungs-Seminar des Lette-Vereins*, which gives full instructions for constructing and using this up-to-date invention which is a saver of fuel, time, and trouble, and adds to the palatability and wholesomeness of food. It is a great boon to rich and poor alike. [Glad to see that you keep up your interest in this great invention, or, as it perhaps had better be called, *discovery*. I don't see why more people don't try it. The fireless stove is especially valuable in those homes where a saving of fuel means real economy. But, aside from the economy, this method of cooking has many other advantages. The rich flavor of the food is preserved. I have been roasting or baking potatoes in my old trunk that I have fitted up. May be others have done the same thing; but the plan is original with me, any way. I take an old pan, of pretty good size, and put in coarse

gravel until it is over half full. This is heated on the stove until every small piece of stone is pretty hot, and then a hole is scooped in the gravel, the potatoes put in and well covered up. The pan is now put in the trunk and well covered on all sides with the cushions. Several hours later, when we are ready to sit down to dinner, the pan is taken out and the potatoes are found to be steaming hot and *perfectly* cooked. Try this if you have not done so already; and if you do not pronounce them the best potatoes you ever ate I'll miss my guess.—H. H. R.]

AFTER READING that very interesting article on wax-rendering, p. 102, I'd like to have H. H. Root stand up in a straight row and answer a few questions.

1. How would it do, instead of emptying out each  $\frac{1}{2}$ -inch cheese of slumgum, to pour directly upon the cheese a fresh lot to be worked?

2. Would there be advantage in doing the work during a hot day or in a hot room?

3. How small an amount of wax annually do you think would make it worth while to own both the unheated and the German?

4. For an annual amount of 25 lbs. of wax would you advise the unheated, or the German?

5. For 300 lbs. annually, which kind would be preferable?

6. Suppose you have combs from which to extract 300 lbs. of wax melted three times in an unheated press: what would be the relative time to extract the same amount of wax from the same material, in a German press?

Before you begin your answers, allow me to thank you for emphasizing the point that plenty of water with the comb must be used. With only a little dab of water and comb it would be so promptly chilled that no wax would be obtained; but by using water enough to fill the press, even a few ounces might work. In other words, the beginner with only a small quantity of wax to extract is likely to make the mistake of thinking that the water must be in proportion to the wax; instead of that he must have a large quantity of *water and wax*, no matter how little wax he has. [All right; here I am in as straight a row as I can get. It's "kind o'" hard to answer you, for you sometimes get me all tangled up. But I'll tell the truth and do the best I can.

1. I don't think it would do at all. There would be just that much more refuse each time, and the thicker the layer of refuse the greater the percentage of loss. The wax from the upper cheese would run down into the lower one, and there would have to be more time spent in getting it out.

2. Yes, I say on page 101 that I think it would be better to do the work in warm weather or else in a warm room.

3. I wouldn't use the two presses together for any amount of wax, no matter how large. My only object in using the German press was to prove the small amount of waste left after the second treatment in the Hatch press.

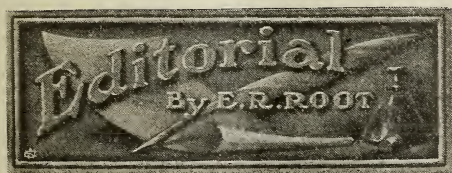
4. The unheated Hatch press, by all means,



5. That depends. For simply rendering the wax I should prefer the Hatch press every time. But if any one objects to working so constantly, he might want the German press, for that can be set going on the stove and left to steam away by itself if necessary. Furthermore, with the German press it is not absolutely necessary to have another boiler for melting up the comb. This is sometimes an advantage, especially when there is an unlimited amount of time and but a small amount of wax to render.

The German press also has the advantage in that it can be used for an uncapping-can if necessary. Then, when it is full, the honey can be pressed out, steam generated, and the cappings melted into wax without further handling. Yet, as I said before, for rendering bright yellow wax in large quantities the unheated Hatch press is the best for the man who is not afraid of a little work.

6. The time taken for rendering wax in the two presses is very nearly the same when an extra boiler is used in connection with the German press as well as with the Hatch press. If there is any difference, it is probably in favor of the latter. But you should remember that the Hatch press which I used was only fifteen inches in diameter. A larger one could be made at but slightly greater expense that would have twice the capacity. Here's the point, however: With the German press, the wax will be of a dirty green color, while with the Hatch press it will be bright yellow and all ready for market.—H. H. R.]



SINCE the editor could not return from the Pennsylvania State Bee-keepers' Convention in time, the answers to *Stray Straws* in this issue are by the associate editor.

THE honey business is not the only one which suffers from the yellow press. The prune industry has been seriously checked by stories derogatory to that product. So has the cheese industry. The olive-oil industry, likewise, has been seriously misrepresented by many on account of cotton-seed oil being stated to be just as good, which it isn't; and, by the statement, it is usually mixed with the latter. Verily we need a law protecting food products from willful and well-paid-for misrepresentation.

HUNT'S LIVE-BEE DEMONSTRATION IN BIG RAPIDS, MICH.

MR. ELMORE HUNT, of M. H. Hunt & Son, Bell Branch, Mich., has been handling live

bees in a wire-cloth cage before the Michigan State Bee-keepers' convention held at Big Rapids recently. The stunt that he performed attracted considerable attention from the general newspaper press, for the papers contained quite a lot about it, the *Detroit News* showing a half-tone of Mr. Hunt in the cage.

We have repeatedly called attention to this form of advertising, and respectfully suggest again that local bee-keepers who have nice honey to sell, and who would desire to dispose of it in their own vicinity at good prices, would do well to make one of these live-bee exhibitions in the windows of one of the retail stores in some of the principal towns or cities in their vicinity.

When you are ready, call in the newspaper men and give them a sample or two of both comb and extracted; and be free to answer all their inquiries.

#### HIVES FOR ANTS.

IT is not generally known that ant-hives are often constructed by persons interested in the study of ants. We are reminded of this by a perusal of Mrs. Adele M. Fielde's little monograph on the construction of portable ant-nests, issued from Woods Holl, Massachusetts, Marine Biological Laboratory, which gives instruction in the method of making an ant-hive. These things are nothing new, and it is a notable fact that the Huber family were responsible for much of our knowledge of ants. The Lubbock ant-hive sits on an island in a basin of water. The Forel nest is surrounded with a wall of plaster of Paris (which the ants can not negotiate), and the Janet nest is of porous stone to allow the ants hiding-ways and a home out of the light. Mrs. Fielde's ant-hives are constructed of panes of glass on the plan of a single-comb observation hive, and in this respect must form a very decided improvement for study purposes, and, besides, are very portable.

#### THE "EDITORIAL WE" AND OUR EDITORIAL FORCE.

THE reader will, perhaps, notice a little change in the use of pronouns in these columns. The editor will hereafter adopt the editorial *we*. While this will, to a certain extent, obscure individuality, GLEANINGS has come to be so big that one man will not, as heretofore, do all of the editorial talking. While it is probably true that E. R. Root will do the larger part of the editorial and footnote work, as heretofore, some of the matter that he has formerly gathered himself will now be collected by others. He now has as assistants in this office H. H. Root and Mr. W. K. Morrison. The latter has devoted an entire lifetime to bees and bee literature; and in addition to all this he has traveled all over beedom, taking in parts of Europe and a very large portion of the American tropics. He has spent not a little time in various parts of the United States in study-

ing the peculiar local conditions as they affect bee-keeping. He reads several of the foreign publications, and in every way is well qualified to render aid in our editorial work.

H. H. Root selects two-thirds of the copy, preparing it for publication; then this copy is all turned over to our old assistant W. P. Root, who inserts the punctuation and otherwise verbatimizes the copy for the convenience of the printers.

But there is still another reason why we should adopt the editorial *we*. The editor has a corps of assistants in the bee-yards doing experimental work. It would be impossible for him to perform personally the detail of all this work. When the experiments are in full progress he is called out to the yards, notes the results, and prepares the matter for publication. While the pronoun *we* will very largely, and almost entirely, for the present at least, reflect E. R. Root's opinion, that opinion will be influenced to a great extent by the opinions and the findings of his assistants.

In the matter of facts and figures relating to the honey market he will have the help of our honey-men, Mr. A. L. Boyden and Mr. Jesse Warren. There will be no change in the editorial management; in fact, the editorial buzzings will emanate from the same source as heretofore. But the editor feels that the time has come when it would be mere egotism to take the singular *form* of the personal pronoun any longer; and, to a certain extent, a usurpation of the "other fellow's thunder." In most cases his assistants will write under their own signatures. Nineteenths of the matter with "—Ed.]" attached to it will be the dictation of E. R. Root, although part of the material may have been supplied by others.

#### FORESTRY AND BEE-KEEPING.

THERE has been considerable criticism of the President's action in setting aside so much land for public forest reserves, and efforts will be made to curb his power in this respect. It is to be hoped these efforts will fail. At the present rate of cutting the forests, it will be about twenty years when there will be no lumber to cut, and we shall be face to face with a lumber famine, seriously curtailing the ability of this country to manufacture goods in which lumber is the most important part of the raw material. The idea now is to cut the trees no faster than they grow, and therefore preserve the forests for all time as a commercial necessity and as a national asset. In Europe the state forests are a source of profit to the country, and it should be so here.

What has this to do with bee-keeping? A great deal of harm would be done to bee-keeping in more than one way by the destruction of these forests. Some of the areas already set apart as forests by the United States government are excellent locations for bees, and two new reserves are proposed—one known as the Southern Appalachian

and the other the White Mountain forest reserve. Both might be termed bee-keeping reserves, as the timber on both is largely of a nectar-producing kind; and by careful handling it will get better. A bill to create these two reserves has passed the Senate, without a single dissenting vote, and the House will probably agree. As this is to be a short session, write your Congressman, requesting him to urge the immediate consideration of the forestry-reserve bill. This will place in the hands of the government vast tracts that are now being laid waste by the ruthless hand of commercialism that looks not to the future, but to immediate gains; hence it is that thousands of young trees are being cut now, which, ten years from now, would yield many fold more lumber than at present. As well might a farmer kill his chickens, his pigs, and his calves, when only two weeks old, rather than let them grow to an age when they would be worth something.

If the government gets hold of these tracts timber will be cut at an age that will yield the best returns. The young trees that are now being destroyed because they are in the way will be saved. We have known all this for half a century, but did nothing. Now is the opportune time to do something. Do it now, and thus help to confer a blessing on your children.

To get lumber enough for our needs we shall have to import; and should the tariff be removed it will have a strong tendency to prevent further advances, for the time being at least. Protection on lumber means the destruction of the beautiful and valuable forests we have.

While you are writing your Congressman, urge him to support any bill that will remove the tariff on lumber, that protects nobody but a few mill-men. The old "stand pat" doctrine of letting the tariff alone has done much mischief already. Admitting that some articles should be protected, lumber is an item that ought to go free.

There is also now a strong opinion among expert foresters that it will pay to plant trees, and there are already artificial woods which are paying a fair profit. In Ohio the catalpa and the black locust (both honey-yielders) are being seriously tested by various parties who hope to realize a good return. It is said, however, the most promising tree of all is the Australian eucalyptus, which grows very rapidly and yields lumber of very high value. Practically all the eucalypti are honey-yielders. Unfortunately they are fitted only to the sub-tropics. California, Arizona, South Texas, the Gulf Coast, and Florida, will reap the benefit.

There is also another strong reason why tree-planting should be begun, and that is to protect the farm lands from spring freshets and summer drouths. Forests act as dams, holding the water back in spring and giving it off in summer. There is also a considerable need of trees on the highways. We could materially improve the prospects of the bee-keeper of the future by suggesting



that nectar-bearing trees have the preference when planting has to be done; and where the bee-keeper is diplomatic in stating his case this will probably be done. Forest trees do not cost very much, and it might pay a bee-keeper to donate the young trees.

#### THE PENNSYLVANIA STATE CONVENTION.

The Pennsylvania State Bee-keepers' convention was held in Harrisburg, Pa., Jan. 17 to 19. About 175 members paid their dues, showing a substantial gain in membership over last year. A little conflict, begun at the meeting a year ago, seemed well nigh irrepressible at this convention. The first two sessions were a little "stormy," but the clouds soon passed over, and clear sky and plenty of sunshine prevailed for the rest of the sessions. As the matter at issue related only to the constitution and policies of this association it will not be necessary to bring them up here.

The papers and general discussion were of a high order. Dr. E. F. Phillips, of the Bureau of Entomology, and foul-brood inspector Charles Stewart, of New York State, delivered several addresses that received the enthusiastic attention of all the members. Both spoke along the lines of foul-brood legislation—a subject in which the Pennsylvania bee-keepers are deeply interested at this time; for be it known the Keystone State has no bee-disease legislation of any sort.

Prof. H. A. Surface, the zoologist in the Department of Agriculture, at Harrisburg, suggested that a committee of three be appointed to wait on the new Governor and invite him down to the meeting, for his offices were just overhead of the convention-room. As a result of the conference it was arranged that the whole convention call on Governor Stewart. A good-sized crowd filed past him. Each member, as he shook hands with His Excellency, was introduced by Prof. Surface. When this was over Dr. E. F. Phillips, at the request of the convention, in a few well-chosen words, explained the very urgent need of a foul-brood law in Pennsylvania. He spoke as follows:

*Mr. Governor:*—The Pennsylvania State Bee-keepers' Association represents the progressive bee-keepers of our State. I would, however, call your attention to the fact that there are within the confines of this commonwealth over 20,000 persons interested in the keeping of bees, with an invested capital of over one-half million dollars.

The industry is endangered in this State by two infectious diseases which attack the developing bees, and the bee-keepers are asking that laws be passed providing for the inspection of apiaries. To illustrate to you what losses may be caused by these maladies, I would cite the epidemic of the Mohawk Valley in the State of New York. In 1899 the actual loss to the industry was over \$25,000, and the disease was spreading rapidly. Inspection was begun, and as a result the ravages have not only been held in check but the loss has been reduced so that last year it was less than \$1000. In this State, both diseases have found a foothold in a number of places widely separated, and the bee-keepers may expect similar losses, constantly increasing in extent unless inspection is instituted, as has been done in over a dozen States. In eight other States the bee-keepers are now working to the same end.

Inspection of apiaries is made more necessary by the fact that so many bee-keepers are interested to

only a small extent in the industry and do not inform themselves about disease. Infection may get into the apiary, and the loss is attributed to "bad luck." A competent inspector can do much toward educating these men in improved methods of bee-keeping, and at the same time keep them from endangering the property of their neighbors through ignorance and neglect. Under proper supervision the industry may become vastly more important than it is to-day, and the resources of the State may be considerably increased. To protect those in bee-keeping on a business basis, the Pennsylvania State Bee-keepers' Association asks for the enactment of legislation of the nature mentioned.

I wish also to state that I have no desire to influence legislation unduly, but merely wish to help the bee-keepers by putting at their disposal such information as may be at hand, which will help them in getting the protection which the industry warrants. On behalf of the bee-keepers of this State, represented by the State Association, I thank you for your consideration of this subject.

The Governor listened attentively, but did not commit himself.

At this convention we had the pleasure of hearing B. A. Hadsell, of Buckeye, Arizona. Mr. H. is one of the most extensive bee-keepers in the country. Last year he produced and sold \$7000 worth of alfalfa honey, but he had to feed \$4000 worth of sugar, so that, with his labor, his 2000 colonies did not net him so large a sum after all.

#### FOUL-BROOD LEGISLATION; SOME PROPOSED LAWS CONCERNING FOUL BROOD, PURE FOOD, AND SPRAYING FRUIT TREES IN BLOOM, THAT ARE OF VITAL INTEREST TO BEE-KEEPERS OF FOUR STATES.

WITHIN the last two days four communications have been received at this office relative to bills before the legislatures of Connecticut, Illinois, Minnesota, and Missouri. All of these were received too late to go in our regular department of *General Correspondence* for this issue: and since it is quite important that these matters be put before our readers as soon as possible, we are glad, therefore, to devote this space to the publication of the different letters as they were received. We hope that our readers for the several States will notice and heed the calls for help.

##### CONNECTICUT.

##### LACK OF INTEREST WILL CAUSE FAILURE.

Our new "foul-brood bill" will be presented to the legislature before February 1st, but we shall probably be not granted a hearing until March 1st. Two years ago we failed to get a law enacted; and, while it might have been defeated if it had progressed far enough to be voted upon, yet the only real reason we know of for its defeat was the very general lack of interest on the part of the bee-keepers. But a law was needed then, for what you now term European foul brood was at that time ravaging a number of apiaries in Fairfield Co., and large districts are at present infested by the disease.

I am now informed on good authority that one apiarist has had his colonies reduced from 80 to 3 during the past season. As each colony died he set out the brood-frames for his bees to clean out, and so spread the disease all through his apiary. In several large sections of Fairfield Co. I am informed that the keeping of bees is practically prohibited by the presence of foul brood unless a continual fight is kept up against it. But it is difficult to arouse the enthusiasm of those apiarists that are not in any way troubled by the disease.

J. ARTHUR SMITH,  
Sec. Conn. Bee-keepers' Ass'n.  
ILLINOIS.

##### FOUL-BROOD AND FRUIT-TREE-SPRAYING BILLS.

I desire to call the attention of the bee-keepers of Illinois to the necessity of helping the passage of the bills which are now pending before the legislature of the State, in the interest of bee culture, as follows:

A bill for an act making an appropriation for the Illinois State Bee-keepers' Association.

A bill for an act providing for the appointment of a State Inspector of Apiaries, and prescribing his powers and his duties.

A bill for an act to prevent the spraying of fruit-bloom.

The first of these bills has already passed the legislature before, and all that is needed is a renewal of the same bill, in the same way that bills are passed for the support of the State agricultural and horticultural associations. The appropriations formerly granted have given our State Association Secretary, Mr. Stone, an opportunity of spreading information on bee culture, and have made our State Society a permanent institution, besides helping it to destroy foul brood within the State.

The second bill is needed to give power to the State Inspector of Apiaries, who has thus far been employed by the State Association, and has done very good work in the destruction of foul brood under the direction of the Association, but might be handicapped if it became necessary to destroy diseased colonies of ignorant or recalcitrant apiarists. It is also needed to put a penalty on the shipping or selling of diseased colonies of bees. The proposed law is almost a duplicate of the Wisconsin foul-brood law. Twelve States or more have foul-brood laws, and it is time that Illinois should fall in line with other progressive States on this point. The proposed law had already passed the Senate of the previous Assembly, and failed in the House only on account of lack of time. It should pass during this session.

The third bill is intended to prevent the wholesale poisoning of bees by a misunderstood or misapplied use of tree-spraying. Fruit-trees should be sprayed when the fruit is forming, but the blossoms should be allowed to fertilize first. In this way the danger to bees and to those who might eat of the poisoned honey will be avoided, and spraying will serve its real purpose—that of destroying the insects that prey on the formed fruit. Spraying just after the bloom has fallen is the most advisable, though ill-informed dealers in spraying-apparatus often recommend spraying during bloom. Spraying during bloom is an injury to the pollen, which often becomes diluted in the poisonous liquid and becomes inert. So, even if the bees were in no danger it would be inadvisable for horticulturists to spray before the bloom is out.

Senator Berry, who is a leading member of the General Assembly, has promised his help, and urges us to use all our influence upon our respective members of the legislature in recommending the passage of these bills; so I trust that every one of our Illinois readers will write to the Representative and Senator of his district to ask careful consideration of these measures.

All favorable answers to your requests—in fact, all the correspondence concerning this matter, should be forwarded to Mr. James A. Stone, of Springfield, in order to put him in possession of all necessary indications. A concerted action will surely result in success when the way is already so well paved.

C. P. DADANT,  
Chairman of Committee on Legislation.

#### MINNESOTA.

##### A COPY OF THE BILL BEFORE THE LEGISLATURE.

I inclose herewith a copy of the bill that the Minnesota Bee-keepers' Society has had introduced in both chambers of the legislature. The bill is Senate file 74, and House file 52. I hope it will fare better than it did two years ago.

Minnehaha Falls, Minn., Jan. 21.

WM. RUSSELL

*A bill to create the office of Inspector of Apiaries; to provide for the suppression of contagious diseases among bees, and to appropriate money therefor.*

Be it enacted by the legislature of the State of Minnesota, SEC. 1.—The Governor shall appoint for a term of two years a State Inspector of Apiaries. Said Inspector shall, when notified of the existence of the disease known as "foul brood" among apiaries, or other diseases infectious in their nature, and injurious to bees in their larval, pupal, or adult stages, examine all reported apiaries and all others in the same locality, and ascertain whether or not such disease exists; and, if satisfied of its existence, shall give the owner or person who has charge of such apiaries full instructions as to the manner of treating them. Within a reasonable time after making such examination the Inspector shall make his report thereon, and if the condition is such as in his judgment renders it necessary, he may give notice to the owner or person in charge of such apiaries, prohibiting the sale, barter, or removal of any bees, honey, or appliance from such affected apiary. SEC. 2.—After inspecting infected hives or fixtures, or handling diseased bees, the Inspector shall, before leaving the premises, or proceeding to any other apiary, thoroughly disinfect any portion of his own person and clothes, and any tools or appliances used by him which have come in contact with in-

fecting material, and shall see that any assistant or assistants with him shall likewise thoroughly disinfect their persons and clothing and any tools and implements used by them.

SEC. 3.—Any bee-keeper who shall be aware of the existence of foul brood in his apiary, or who shall receive notice from the Inspector as provided in Section 1 of this act, and who shall sell, barter, give away, or remove any such apiary or any honey, appliances, or bees from such apiary, any bee-keeper who shall refuse to allow the Inspector to examine his apiary, honey, and appliances, shall be fined not less than \$50.00 nor more than \$100.00, or be imprisoned in the county jail not less than one month nor more than two months.

SEC. 4.—The Inspector of Apiaries shall make, at the close of each calendar year, a report to the Governor, stating the number of apiaries visited, the number of those diseased and treated, the effect of such treatment, and the disposition made of such apiaries.

SEC. 5.—The compensation of said Inspector of Apiaries for service and expense is here fixed at \$1000 per year; and there is hereby appropriated out of money in the State treasury, not otherwise appropriated, the sum of \$1000 each year for the maintenance of said Inspector of Apiaries.

SEC. 6.—This act shall take effect immediately after its passage.

#### MISSOURI.

##### FOUL-BROOD AND PURE-FOOD BILLS.

Missouri bee-keepers, attention! "The Apiary Bill," providing for an inspector of apiaries to aid and assist in the development and protection of the honey industry, and for the prevention and suppression of diseases among honey-bees, such as foul brood, etc., has been introduced in the senate of the 44th general assembly, and is called Senate bill No. 145.

I earnestly request all bee-keepers of Missouri to write to the Representative of their county in our legislature, also to the Senator of their district, a letter, urging them to vote and work for Senate bill No. 145, as it is of the utmost importance to the bee-keepers of the State that this bill may pass and become a law. It would assist me in my work if each one who has written a letter to our Representatives and Senators would send me a postal card stating to whom he has written, as I, when I approach our legislature at Jefferson City, will know that they have heard from home.

Brother bee-keepers, let us all work for the "Foul-brood Bill," and we shall succeed in having it passed. There is another bill which is before the legislature now, which is of great importance to the bee-keepers; that is, the "Pure-food Bill." A bill has been introduced in the Senate, being Senate bills Nos. 47 and 48, also in the House, being House bills Nos. 215 and 216 (the Senate and House bills read alike), which, if they become a law, will stop the sale of any article under the name of honey which is not the pure product of the honey-bee.

It will be seen that the demand for honey must increase if these bills pass and become a law, as it will stop the adulteration of honey by mixing honey with glucose and calling it honey, or by putting a small piece of comb honey in a tumbler and filling it up with glucose and calling that honey.

Bee-keepers, write to your Representatives, and Senators also, to support these bills. Write to the Senators to support the "Apiary bill" No. 145, and the "Pure-food Bills" Nos. 47 and 48. Write to your Representatives to support the Apiary bill. Senate bill No. 145, and the Pure-food bills, being House bills Nos. 215 and 216.

Bee-keepers, don't miss this chance to do something for yourselves.

ROBT A. HOLEKAMP,  
Sec. Mo. State Bee-keepers' Ass'n,  
4263 Virginia Ave., St. Louis.

#### OPPOSITION TO THE PURE-FOOD LAW.

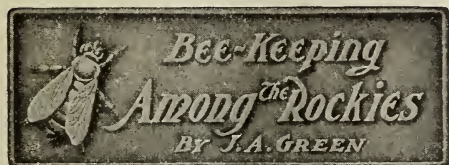
THE recently enacted national pure-food law is now meeting with considerable opposition, and it seems very clear that the adulterators have been reserving their fire for the Hon. Secretary of Agriculture and his assistants, who have to interpret the law. It is also evident that the brewers and glucose-makers will attempt to carry a certain sentiment with them by claiming to be friends of the farmer because they are large purchasers of corn. As a matter of fact, the new law will undoubtedly be of great benefit to the honest farmer, more particularly the producers of maple syrup, cane syrup, sorghum syrup, cane sugar, and beet sugar; and last, but not least, the honey-producers



of America. It is hoped, also, to create a jelly, jam, and preserves industry, now that buyers are sure of the purity of the product. Other agricultural industries will similarly be benefited, hence the farmer is very much interested in a rigid enforcement of the law, and we think we know the bee-keepers of the country well enough to say they will be very earnest supporters of the new law, and will work with the Department of Agriculture in enforcing it. Unless all signs fail, it is only a matter of time when every State in the Union will possess a pure-food law framed in strict conformity with the national law. Vermont has a new pure-food law based on the national or Hepburn law. Indiana, Louisiana, Colorado, California, Missouri, and Kansas are getting in line to pass similar laws.

It may seem to some that GLEANINGS has harped rather too much on this matter; but the adulteration evil threatened to destroy our industry, and we shall feel safer when every State has an efficient pure-food law.

Honey is one of the finest foods known, hence it has every thing to gain and nothing to lose by the enforcement of pure-food laws, which is practically all the protection we require to establish our industry on a safe and sound basis.



#### BROOD-REARING IN WINTER.

Last March I told of having found brood in a number of hives in February. January 10th I found quite a patch of brood in all stages in a colony that had been moved a couple of weeks before. Dec. 15th I found brood in all stages in a strong colony that was in a normal condition and had not been disturbed previously. Apparently, under some conditions some colonies of bees will breed more or less all winter. Whether this is injurious or the reverse is something I am trying to find out.

#### CAPPINGS COLORED BY LAMPBLACK.

Last fall I found a few sections which had a curious gray appearance, shading downward from the top of the comb. At first I thought it had been caused by ashes from the smoker, but close investigation showed that the one who put in the starters had carelessly allowed the lamp to smoke. The lampblack, mixing with the melted wax, had smeared the inside of the top of the section with black wax; and, though there was only a very small quantity of it, the bees had carried enough of it out and mixed it with the capping to color it considerably. This is a good thing to avoid.

#### FEATHERS FOR BRUSHING BEES.

E. W. Alexander, on page 1357, says he has always thought that there was nothing that would irritate bees to the stinging-point like brushing them with feathers, and intimates that one who uses feathers for that purpose must be ignorant in handling bees. If I am not mistaken, the editor of one of our bee journals recently administered a similar castigation to some one who expressed a preference for feathers. I wonder how much of this is real observation and how much the survival of an old notion—I might almost call it a superstition. I would not recommend a turkey wing for brushing bees, as some do; but for a limited amount of brushing I know of nothing better than one of the stiff quill feathers from the left wing of a goose or turkey. A feather from the right wing is all right for a left-handed man. The whole wing is not desirable, because only the outside feathers on one edge can be properly used for brushing. A feather will not stand rough usage. When it becomes daubed with honey, or the barbs become so matted up that bees become entangled in them, or so broken down that the bees are brushed with the stiff midrib instead of with the soft barb or plume, the bees are naturally irritated, not because it is a feather, but because the bee-keeper is careless. I have never seen the slightest indication that the right kind of feather, properly used, angered bees, and I know of a number of old bee-keepers who prefer feathers for brushing bees.

#### HIVE-LIFTING DEVICES.

Frank McGlade's symposium on hive-lifting devices, page 1506, is rather amusing; but such things should not be allowed to distract the bee-keeper's attention from the fact that such devices are badly needed by some, and that they are bound to come into more or less general use. The devices that have been illustrated are undoubtedly practical to a certain extent; but they have the disadvantage of being somewhat clumsy and difficult to move around and adjust under all circumstances, and in some apiaries none of them could be used. They require more room and clear space for operation than some bee-keepers can readily allow for each hive. Some of them can not be used except on level ground, and all of them hinder work with the hive to a considerable extent. A more practical plan for many would be to utilize the shade-shed in common use in many parts of the West as a support for a lifting device. Pictures of these have been frequently given, and most of the readers of GLEANINGS doubtless know how they are arranged. The hives are set in long rows, generally two rows back to back, with space sufficient for working between. Overhead is erected a shed, the roof consisting of brush or similar material laid over a framework of poles or wire. To adapt these for hive-lifting devices, all that is necessary is to have the timbers directly over the line of hives substantial enough to support the weight of



a hive at any point. Hang from this a "safety lift." This is a block-and-tackle arrangement with self-locking device. With this the load is readily raised or lowered, and left suspended at any point without attention by the operator. A small size, costing about \$1.25, complete with rope, will answer for lifting hives, and is an exceedingly useful tool for many other purposes. I have used one for several years, and would not be without it for several times its cost. With this, one man can easily lift up to 300 lbs. The next larger size, costing about \$2.00, might be more generally useful. I have just got one still larger, for heavy work.

Some sort of clamping device is necessary for attaching to the hive. With some hives a simple rope loop would answer. Hook your lift to the rafter above the hive; attach your clamp to the hive, and you can readily lift the hive or any part of it and leave it suspended while you adjust supers or make any needed examination of the brood-chamber.

An improvement over this arrangement would be to bolt to the rafter overhead a steel track, such as is used for hanging barn doors. On this run the ordinary barn-door hanger and suspend the safety lift from that. It would be possible to construct your track so that a hive, after being lifted, could be easily run to any point on the line, but this would require so high a track that it might not be practical. I have just installed such a track for other purposes, and will experiment with hives to see what can be done. In most cases, though, it would probably be more practical to lift the hive, run a wheelbarrow under it, and use that for transportation. With space enough between the hives to run a wheelbarrow, the track and hanger would enable you to move the load over the wheelbarrow easily and save a lot of back-breaking work.

#### GOVERNMENT LEASE OF BEE TERRITORY.

It is possible that the editor is correct in saying at the close of the article by R. F. Holtermann that government control of bee territory is a will-o'-the-wisp that we shall probably never attain. Certainly we shall never attain to it unless there is a demand for it; and if we leave the discussion of it to those who, having given the matter little thought, imagine difficulties where none exist, there is not likely to be much enthusiasm in its favor. I hope my readers will pardon me for taking space to discuss a subject of little immediate value. It may become of vital interest sooner than we expect. Much might be said on the subject, but I will confine myself to some of the points usually brought up. If we say any thing about denying to any one the right to keep bees, some are up in arms at once. The farmer, they say, produces the nectar, and he should be allowed to keep bees to gather it. Suppose we grant this. If he has the right to keep bees to gather the nectar his land produces, undoubtedly his neighbor has also the same right, and likewise every other land-owner. It does not by any means follow that he has

a right to keep an unrestricted number. Some one has well said that one man's rights leave off exactly where another man's rights begin.

There are few things we know less about than the number of colonies a given area will support most profitably, and a sane man would hardly think of restricting the number of colonies to be kept on a square mile, the rule to apply to all localities alike. But we can make an approximation. Taking the general consensus of opinion among the beekeepers of the greater part of the United States and Canada, it seems that a bee-range is considered to have a radius of about three miles, and that not over 100 colonies of bees should be kept in this territory. This bee-range, six miles in diameter, contains 28.27 square miles, 18,092 acres, or something over 113 farms of 160 acres each. It will be seen, therefore, that, following the generally accepted ideas as to a bee-range and its stocking, each 160-acre farm is entitled to keep just about one colony of bees as its share of the general average of bee pasturage. The land-owner who keeps more than this, provided his land is not above the average in nectar secretion, does so, not by any moral right, but simply by seizing on the rights that others have failed to assert. He would be occupying the territory by "squatter's rights," just the same as if he did not own a foot of land or produce an ounce of nectar. I would not try to deprive any producer of nectar of the right to keep a few bees. Remembering that my figures are only approximate, and that the territory is not covered evenly by a single apiary, I would concede that each owner of 160 acres of land of average nectar secretion should have the right to keep two colonies of bees. In some places this figure would be too low. I believe there are many localities where it would be too high. If he has an orchard, or if he raises crops of alfalfa, alsike, sweet clover, buckwheat, or other plants of recognized value for honey, he might be allowed a certain definite increase in the number of colonies he might keep, according to the amount of land so occupied. This land-owner's right should be only for bees to be kept on his premises, and strictly nontransferable. In nearly all localities, after all who cared to had availed themselves of this right, the bee-range would still be far from being fully occupied. Will any one tell me how the rights of anybody would be infringed on if the government should take possession of these unused rights and dispose of them, by auction or otherwise, for the general good? Details are unnecessary; but I would suggest that for a bee-range the congressional township, six miles square, into which many of our States are divided, would be a very good size. If it were thought best to limit the number of colonies the lease-holder might keep in his one apiary, this might be fixed by a commission for the purpose, and it might be well to provide that no commercial apiary should be started within a fixed distance from an established apiary in any adjoining range.



#### CO-OPERATIVE EXPERIMENTS.

The Ontario Agricultural and Experimental Union, which consists of students, ex-students, and the staff, past and present, of the Ontario Agricultural College, Guelph, Ont., was inaugurated during the student years of the writer, 1880. The most important work is co-operative experiments in agriculture, and it has steadily grown until, during the past year, it had 5700 experimenters. Of it, Prof. W. M. Hays, Assistant Secretary of Agriculture for the United States, said in his address (for he honored the convention Dec. 11 and 12 with his presence), the experimental union was recognized, in the great work which it was achieving, by all prominent agriculturists and stock-raisers throughout the States. This experimental union was one of the very brightest stars in the whole realm of agricultural organization throughout the world.

#### APICULTURAL EXPERIMENTS PAST AND FUTURE.

It was this union which, under the direction of the writer, carried on, so far as I know, the first systematic experiments to determine to what extent, if any, and under varying conditions, the bees thinned out the septum of comb foundation. The object in part was to draw attention to the need of thinner section foundation than many used.

The writer brought in a resolution which was indorsed by the members, that, during the coming year, a series of co-operative tests be conducted to determine various matters as to the percentage of formic acid in honey; to see if the percentage varies in the honey put up by varieties of bees, and also if the percentage varies in individual stocks of the same variety, particularly if the temperament varies as to gentleness and irritability; again, to what extent it varies in honey from various sources, such as clover, linden, and buckwheat; and if it shows a gradual increase in percentage of formic acid as the season advances; also to determine at what stage of storing and ripening the formic acid is put into the honey.

#### QUALIFICATION FOR WORK.

We want 25 to 35 careful bee-keepers to co-operate in this work, and we should be pleased to have a dozen or so from the Northern States, those having pure Italian, Carniolan, and, if possible, black bees, and, if possible, varying temperaments will be welcomed. The test is to be with clover, basswood, raspberry, and buckwheat honey—any or all of them—the more the better.

Four-ounce samples will be required. Experimenters will not be advertised for; but any seeing this article can signify their willingness to co-operate by writing me at Brantford, Canada. This work should result in valuable light being thrown upon the above question.

#### SHADE FOR BEES.

On page 1498, W. F. Card states, "We have been unable to see any marked difference between those that are in a position where the sun strikes them early in the morning and those that are in heavy shade. Both dig out at about the same time." This is my experience: Bees on a cloudy day do not remain in the hive. It is a matter of nectar in the blossoms, dew or little or no dew on the blossoms upon which they have to work, and temperature of the atmosphere.

#### PARTHENOGENESIS IN PLANTS.

On page 877 G. M. Doolittle, in the course of one of those excellent conversations, has the following: "There is no pollen produced by the basswood or linden, as you know."

"Yes, I know there is not; but the bees gather it from the wild grape and other sources."

J. E. Crane, page 1355, says "wild grape blossoms early in June." This is true of Ontario. More surely the man who can prove that plants reproduce themselves generation after generation by the principle of parthenogenesis\* should have a monument erected to his memory. Do the bees not gather less pollen when there is an abundance of nectar in the blossoms? Again, buckwheat and other pollen keep over winter with us in Canada, and surely the atmosphere of New York State can not be more corrupting than our own. There is a pretty good lot of bee-keepers in York State—in fact, I would almost take them for Canadians knowing some good things we have not heard of in Canada.

#### IRASCIBILITY.

Under the above caption D. M. M., in *British Bee Journal*, page 371, writes: "The season of the year, the nature of the flow, the amount of interference they are subjected to, as well as climatic conditions, all go to explain the uncertain temper of bees at times. Race also counts considerably, and the blending of certain races almost invariably produces "cross" bees; for, although we must very frequently indeed seek the prime cause for ill temper in the actions and conduct of their owners, yet I am confident that the introduction of certain new strains, with the object of securing the energy and vitality which some preachers tell us are lacking in our natives, has produced an amount of temper in my own bees I have

\*The word parthenogenesis is hardly applicable here. Many plants are self-fertilizing. The sugar cane, banana, and life-plant (*Bryophyllum*) are excellent examples of plants which are not reproduced from seed, except occasionally.—Ed.



hitherto been a stranger to . . . Heather men know that bees generally are more cross-tempered during the late flow, especially on very hot days near its close. They sting, too, at that time with a degree of force and venom unknown at other periods of the year. Their whole being seems to be so impregnated with the eager desire for indefatigable and uninterrupted work that any check or hindrance is at once markedly resented. Here, too, their line of flight is not in one particular direction in front of their hives, and so straight for the foraging fields, as is the case at other times of the year."

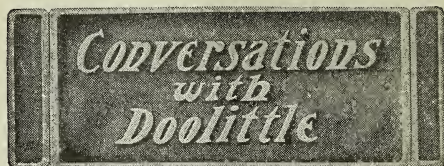
In the first portion of this extract there is the foundation for a whole sermon to beginners and even somewhat expert bee-keepers. The *nature* of the interference has perhaps more to do with the temper of the bees than the *amount*. Bees must not be crushed. If queen-cells are removed, the "royal jelly" should be carefully removed from the reach of the bees. I have had practically no experience with the wasteful practice of uncapping drone comb. I get rid of the comb, but they say such practice angers the bees. Frank Benton taught me that, in crossing bees, the physical characteristics are largely inherited from the queen, and the temperament from the drone. This has proved correct in my experience with the progeny of Cyprian queens mated with Carniolan drones. These bees were gentle.

For several years it has been my firm conviction that the theory that bees are more gentle as the honey-flow is greater is a wrong theory. No doubt that, with a moderate honey-flow, the bees can be handled with greater comfort than with no flow; but I am inclined to think that, in a very heavy honey-flow, no matter what the source, the bees are inclined to act as described in the latter part of the extract. Do the nerves of the bees become tired with overwork, and does the strain tend to irritability? It would be well and interesting to have the United States and Great Britain carry on the formic-acid tests in a co-operative way, as outlined by the Experimental Union.\*

Prof. W. M. Hays, in his address before the Experimental Union, stated that, in the matter of exchanging ideas on the progress of agricultural science, there was the fullest reciprocity between Canada and the United States. Prof. Hays might have included many other countries in this reciprocity. An apicultural publication contains very little which is not applicable to all countries. Circulation and success then depend upon giving the best value for the price.

The new tariff before the Dominion house still further reduces the duty on beeswax if coming from Great Britain and British West Indies. Originally it was 10 per cent to all countries; then these countries had  $\frac{1}{2}$  prefer-

ence. It has now been reduced to 5 per cent. Who is the power behind the throne to effect this last change?



#### BEEES, LOCATION, AND THE APIARIST.

"Say, Doolittle, what are the three great essentials in bee-keeping?"

"Think a minute, Jones. Can there be any such thing as bee-keeping without bees?"

"Why, no—of course not."

"Then the bees must of necessity be first, must they not?"

"Yes."

"Then you have answered regarding one of the essentials without my telling you, have you not?"

"Yes; but it is necessary that I know something more about the bees than just simply that I have them, in order to make a success, is it not?"

"I suppose so. But can you not answer the knowledge part as well as you did the bee part?"

"No. I want you to tell me some of the particulars about the bees that it will be necessary for me to know in order that I may make a success at keeping bees."

"Well, first of all I will say that what you study out about the bees yourself will be of much more value to you than what some one tells you. Procure one of the books on bees, and study it till you are thoroughly familiar with all it contains, and it will make an impression on your mind of greater value than will that which I tell you personally."

"I do not know how you make that out."

"Just like this. In reading, if you run across something which you do not fully understand at first, you will stick to that one thing till you thoroughly master it; while if I tell you things I shall pass along from one to another so rapidly that you will lose the first while I am talking about the second, and so on and on, till you will hear so much at one sitting that you will not fully grasp any of it, to an extent that it will enter into the 'warp and woof' of your life."

"It is possible that you are right; but you tell me something further about bees and I will run the risk of remembering it."

"Very well. First among the bees of any colony is the queen. She is the all-important factor. If she is a No. 1 in all respects your chance for success from that colony is good, and from there down to failure, just in proportion as she is good. The queen lays all of the eggs from which bees mature; hence, the more eggs the more bees. Do you catch on here?"

\* Since writing the above it has been my pleasure, and to my solid profit, on account of ideas gleaned from members there, to attend the Michigan State convention at Big Rapids. Several of the best and most careful bee-keepers in the State are going to join in the formic-acid experiments.



"Yes, I think so."

"The time from the laying of the egg to the emerging of the perfect bee is 21 days. From the emerging of the bee until it goes into the field to labor is 16 days. From the day the egg is laid until the bee is a field worker is 37 days, when everything is in a normal condition. From this you will see that the time when the eggs are laid is *very* important, and has more to do with our success than all else in the matter of the bees."

"I had not thought of this. But go on further."

"A further going-on will bring us to the second of the three great essentials which you asked about at the start."

"How is that?"

"What is the bee good for?"

"Securing honey, of course."

"Where is the bee to secure the honey?"

"From the flowers."

"Again you have answered about the second great essential. Without the flowers the bees would be of no use; and the flowers are included by the bee-keepers' term 'location.'"

"That is so. I see now what you are after, and again I ask you to tell me something about location as regards success."

"Most of us are bound by ties to a certain locality. The man who is free should carefully select his location; but the man who makes a success in a poor field is entitled to more credit than the one in a good location."

"Again I begin to see. I may have read of these things, but they never took hold of me as this talk is doing."

"All right. That gives me courage to go on. A thorough examination of a location is of *great* importance. It is only in exceptional locations that there is a continuous honey-flow during the summer season. With only one source of supply, extra care and management are needed to secure the bees so that they be in readiness when it comes."

"Well, there—surely that must be right; and the eggs must be laid at least 37 days before the ascertained time that the supply is to come. I begin to see why you place the bees and the location as two of the great essentials."

"If you can hold on to this till you are able to bring the bees and the location together—that is, the maximum number of bees at just the right time to meet your supply in your location, I shall feel confident that you will answer '*here am I*' to the third great essential."

"How is that?"

"The third great essential is the *bee-keeper*. The bee-keeper must be a man of *push*. Most day laborers and month hands glance at the sun occasionally to see when it reaches the meridian (dinner), and again to see how near it is to going down; but whoever heard of a successful apiarist doing this, unless to see if he could possibly finish some job of work already begun? To the *true* bee-keeper his work among the bees is as fun."

"I guess you are right, for I almost begin

to feel my fingers itch to be at work with them in the summer sunshine."

"Which shows me that you may be a successful apiarist or you may not."

"How is that?"

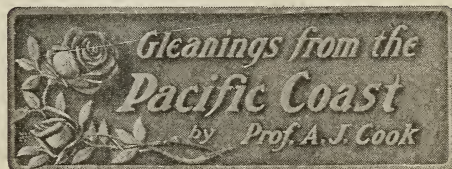
"'Tis winter now, and your fingers may cease itching before the summer sun ever shines. If your fingers were itching to commence this minute at the work, and reading for the winter, which is necessary to prepare you for a successful summer's work, I should feel more hopeful of you. The man who spends his time after the honey harvest is over till spring opens up in the corner grocery, or in playing checkers, backgammon, or other games, being more interested in them than in preparing for the coming season's work with the bees, is not liable to make a successful bee-keeper in the fullest sense of the word."

"Are you not a little hard on me?"

"Possibly so. But I wanted you to realize fully what this last of the three great essentials means. You seemed to realize more perfectly about the two first. Remember that it devolves on *yourself* more largely than on any of the rest, even though I have placed the bee-keeper as third in the three great essentials. It is for you to understand that the greatest point in bee-keeping is to have the bees at the *right time for the harvest*. There is no sense at all in working for bees or stimulating breeding when the harvest is over and gone."

"Yes; but that is next summer's work, is it not?"

"It *should* be. But unless you have every thing made and prepared this winter, and your mind filled with useful knowledge, you may be making bee-fixtures, and ignorant, next spring, at just the time when you should be pushing the bees for all they are worth toward securing the maximum number in time for the harvest. The *winter* is the time to prepare for next summer, and no successful bee-keeper will slacken his pace till he has his hives, sections, etc., and mind, all in thorough readiness to use at a moment's notice when the season with the bees opens up for 1907."



THE SCHULTZ METHOD OF SHEETING WAX;  
MR. SCHULTZ AS AN INVENTOR; TREE-  
PLANTING IN GERMANY.

In the early spring, while I was yet in Berlin, I spent one day with one of the ablest bee-keepers of Germany, Mr. Schultz. He is not only a man of rare intelligence, but he possesses at the same time exceptional inventive genius. Among the many things

that I saw there was his method of producing wax sheets for the ordinary foundation. These are made on a huge revolving hollow cylinder. This cylinder, I should say, was as much as six feet in diameter, and fully as long. In revolving, the lower portion of the cylinder dips in the hot wax, and the number of revolutions required to fashion sheets of the required depth is easily determined by taking off a shaving of these wax sheets. It is easy to remove these great wax sheets from the cylinder, after which they are cut to any desired form and size. Then, by passing between rollers something like the rollers of a ringer, these sheets are thinned to any required weight.

#### INVENTIONS.

It will be remembered that Mr. Schultz was the first to invent and manufacture the "Good candy." I found he had also invented many other very interesting pieces of apparatus. But, strange to say, he uses hives that open only at the end. The frames are much like our own, but, of course, are removed with no slight difficulty. Mr. S. makes a large number of these hives for sale.

#### SETTING TREES FOR HONEY.

In the great city of Berlin, as also in most of the rural villages of that country, one of the most charming features of the landscape is the uniform planting of trees along the streets and highways. Only one kind of tree is planted on any particular street in the city of Berlin. One has only to see these magnificent avenues of trees to become quickly converted to this style of planting. The effect is certainly very charming. There is one thing that surprised me very much as I toured about the streets of the capital city of Germany. There is never a tree missing, and all trees are uniform in size. It is not to be believed that no trees have ever died, and, of course, dead trees must have been replaced by living ones. How, then, could there be such uniformity of size? I think I have the solution. One day I saw some foresters setting a tree in Berlin which I think must have been twenty feet high and of corresponding size. Of course, this was no light task, but it was done so carefully that I have no doubt of the success of the undertaking. Yet we must remember that labor is painfully cheap in this great metropolis. Laborers there receive only from one-half to one-third as much as is paid in this country, even where wages are lowest.

One of the things that pleased me much was to note how many trees in the streets and along the roadsides were useful for other purposes than ornament. The linden is a very common tree in Germany, and, like the American linden, the European linden ranks high as a honey-producing tree. The honey-locust is also another very common tree. This often produces large quantities of nectar. There were other trees of like character. I think we can not urge too frequently the desirability of this practice. The linden and the tulip in the northern part of our country; the sourwood in the South, and

the eucalyptus in California and other arid regions of the West, may well come to the front in all our tree-planting. These trees are not second in beauty, and are also famed as honey-producers.

#### PHACELIA.

In the region about Mr. Schultz's apiary the landscaping is certainly most attractive. Great avenues of honey-locust were to be seen along the streets as one walked from the depot to the apiary, perhaps a distance of half a mile. I asked Mr. Schultz to what plant he gave preference as a honey-producer in his vicinity. He replied, "I think the phacelia is one of the very best." I was glad to hear this praise of one of our most common flowers of Southern California. This plant is known to science as *Phacelia tanacetifolia*. There are two families of plants represented in California by numerous species which are peculiar in their method of blooming. This is said to be scorpioid inflorescence. The spikes of flowers coil so that they resemble exceedingly a worm or caterpillar. This similarity is sometimes so striking as to be almost startling. One of the families is *Boraginaceæ* to which belongs the common borage, also famous as a honey-plant, and the other a closely allied family, *Hydrophyllaceæ*, which contains the phacelia. We have numerous species of these phacelia here at Claremont, most of which are very attractive, and to me peculiarly so, as they are all scorpioid. This *Phacelia tanacetifolia* was introduced from America into Germany, and has become very much prized for its nectar secretion.



#### EUROPEAN VS. AMERICAN FOUL BROOD.

The Cure Given in the Nov. 1st, 1905, Issue Never Intended for American Foul Brood; the Bees Not Able to Remove Larvæ, Diseased with American Foul Brood, from the Cells; the two Diseases Compared.

BY E. W. ALEXANDER.

[The reader should note that the new names for the brood diseases are used in this article. That is, the old foul brood is now called *American foul brood*; and "black brood," *European foul brood*.—ED.]

I do wish I could impress on the minds of all bee-keepers that I have never recommended any cure for American foul brood, and I wish to have it understood that I don't think that, up to the present time, there has ever been a comb that was affected by Amer-



ican foul brood cured of that disease. You might as soon expect a colony of bees to clean out their combs if filled with paint as to expect them to be able to remove the rotten larvæ from American foul-brood combs. I will admit that there are some things seemingly about the same in European foul brood and American foul brood, but in other respects they are no more alike than the mildest case of bowel trouble and the Asiatic cholera.

Many bee-keepers are continually speaking and writing of these two diseases as one and the same. Now, if it were not for the young and inexperienced bee-keeper I would not notice this mixing up of a very important matter. Then when my critics go still further and speak of the cure I recommended some time ago for European foul brood as failing to cure American foul brood, and in that way belittle that cure when I from the first wrote that I did not think it of any use for American foul brood, they do me injustice. You might as well expect to cure American foul brood by throwing a cup of cold water in the grass in front of your hives as to expect to cure it by requeening as I recommended for European foul brood.

The reason why American foul brood has never been cleaned out of a comb is because a larva that dies from that disease is so much like glue that the bees can not remove it in its soft state; and before it dries down it penetrates with its spores into the cocoons of the cell until it becomes a part of the comb itself, where it can not be reached by any disinfectants, nor removed by the bees. Such infected cell becomes ever afterward worthless to rear brood in. But not so with European foul brood. Even in its very worst stages, after the larva dies with this disease it soon dries up and cleaves from the cell, and is easily removed by the bees; consequently the cell is soon ready for another egg which often matures into a healthy bee.

Another point of difference is, a larva affected with American foul brood seldom dies until about old enough to be capped over, or after it is capped by the bees, while a larva dying from the effect of European foul brood seldom lives to be capped over, as it usually dies when from two to four days old. There is only one course of treatment for American foul brood, that is of any use. This is now known as the McEvoy treatment. That is, to remove the bees from their combs and put them on comb-foundation starters, and in two or three days remove them again to full frames of foundation. This treatment will save the bees, but is no cure for the combs, which are worthless except for wax. Fifteen years fighting this disease forty years ago, when this part of New York State was badly affected by it, gave me lots of experience. At that time I lost several hundred colonies with American foul brood, as we had no foundation then to use, and our only way was to cut out the combs as fast as it appeared and melt them up, and let the bees build new combs again. We cut the combs across just above

the brood, leaving the honey in the hive with a strip of comb as a starter to build on. We did not then think the honey diseased, but I now know it was with American foul brood; but with European foul brood I have my doubts as to the honey being affected.

I have given many combs of honey from colonies badly diseased with European foul brood to healthy colonies, and have never seen a case where it had a bad effect. This fact, and that of the honey, combs, and pollen of a colony badly affected with European foul brood becoming perfectly healthy when requeened with a young virgin, as I recommended in my cure for European foul brood, is strong evidence that the honey is not the means of spreading this disease. It is very easy to cure an apiary of European foul brood; but the old American foul brood is incurable. As I said before, you can save the bees by the McEvoy treatment, but you can not save the combs.

I am well aware that on some points in the above I am crossing swords with those who are considered good authority; but on this subject in question I write the same as on other subjects, simply from long and extensive experience. I don't take anything as fact until I have thoroughly tested it on at least 50 or 100 colonies for two or more years. This jumping at conclusions because some one says so and so, I think but very little of.

European foul brood will spread much faster through an apiary than American foul brood, and kill the brood quicker than any other disease that I ever dealt with. Coming as it does before the colonies become very strong in the spring, it soon reduces them to a mere handful of discouraged bees unable to accomplish any thing, and it is hard for their owner to realize that he will ever again have strong healthy colonies in those hives.

But don't be discouraged. I have been through it all, and what we have done you can do. All that is necessary is to follow the plan I recommended in the Nov. 1st, 1905, issue, and you will in a short time have as strong healthy colonies as you ever saw.

When we had this disease, black and hybrid bees were about the only ones affected. I sometimes think that, if the apiaries of some bee-keepers were attacked with this disease it would be a blessing in disguise, for it would necessitate requeening their colonies at once with some good honey-gathering strain of Italian bees; and if this were done about the first of June these requeened colonies would be in a fine healthy condition for an August harvest; and then with a good working force of Italian bees their owner would secure a larger surplus than he could possibly have had if it were not for requeening to cure the disease. I think these black and hybrid bees cost us nearly all we can get from them, and what they lack in squaring accounts with honey they make up in stinging and boiling over and under their hives when one attempts to handle them.

Delanson, N. Y.



[At the foul-brood convention in San Antonio the feeling was expressed that the Alexander treatment would not work in a locality where the European or black brood had just gotten a foothold—that it was only when the disease had practically worn itself out that the dequeening method would effect a cure. We shall be glad to receive reports from those who tried the Alexander cure.]

Our correspondent makes a fairly accurate comparison of the two diseases. In some respects there are marked differences, especially in the condition of the brood-comb after the larvæ have died. It seems very clear that the bees can polish up the combs, and possibly disinfect them, after the ravages of European foul brood, when it would be impossible for them to do any thing with combs affected with the American disease.

We wish to bear testimony that Mr. Alexander never made any claims for his cure in the case of American foul brood. The suggestion was made by one or two correspondents, and by the editor, that possibly the treatment *might* do some good with that disease; but no claims were made.

When Mr. Alexander speaks of American foul brood as being incurable he does not mean, as we take it, that the McEvoy treatment, which has given such excellent results through Canada, Wisconsin, Michigan, and elsewhere, would not prove effective. As we understand him, he means that no treatment can disinfect combs that have been affected with old-fashioned (American) foul brood, and he is probably correct. The gluey, varnish-like character of the dead matter of this disease hardens down like so much cement; and when the stuff is smeared over the cells, and dried on, it renders the disinfection of the combs by means of formaldehyde difficult and uncertain.

It will be noted that we have started the use of the names European and American foul brood. The editor believes it is wise to adopt these names in order that we may be more sure of retaining the protection of legislation that specifically mentions *foul* brood, but says nothing about *black* brood. It is difficult at best to get foul-brood laws, and when once secured it is better to let well enough alone. By calling both diseases "foul brood," drawing the distinction by means of a qualifying adjective, we solve all difficulties at once.—Ed.]

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### SYSTEM.

Some Crude Methods and their Disadvantages; a Thin Board for Keeping a Complete Record of all the Colonies in an Apiary.

BY PHILIP E. CRANE.

*Mr. Editor:*—While reading *System* a few days ago I came across a statement among the editorials that interested me greatly. It was to the effect that one of the best known of the Boston paper-houses some time ago

installed some new systems in their business, and that in the first fourteen months after the installation the company had saved sixty per cent on its expenses over the corresponding period preceding. Being somewhat of a system crank myself, as well as interested in bees, I at once thought how true this might be of a great many bee-keepers. There was a time when business men found it necessary to look up the condition of their business only at the end of the year, while now they must know the exact standing of the business each morning before any thing further is done. The same is true of the bee-keeper. Years ago, at the end of the season he looked to see if each colony had a queen, nothing more. To-day he must be able at any time through the season to tell the exact condition of any colony if he would be in any way successful.

For years I have watched the journals to see how different bee-keepers kept their records in the apiaries. One of the worst problems is to devise a system that will meet the needs of all; indeed, this is next to impossible, for there are so many methods of carrying on the pursuit that what will do for one will be of no value to another. Many have offered suggestions, some of which applied to one kind of hive, some to another. Many were practicable for the man with a few swarms of bees, but were of no value to the person with a large number. Out of them all I have never seen any that met the needs of the large producer who makes the production of honey his entire business. The profits arising from the sale of honey are not large, and it behooves the producer to get along with as little help as possible and do the work properly.

For several years two of us have carried on from five to six apiaries, ranging from two and one-half to ten miles from home, and containing from 60 to 150 colonies of bees. Our ability to do this is to a great extent due to our system of records. These admit of our looking up the condition of any swarm from the beginning of the season till the end within five seconds, and without stirring from our tracks.

Let us look for a minute at some of the plans that have been suggested from time to time. One man places a stone on different corners of the cover to denote different conditions of the colony. It is plain to be seen that this plan applies only to those using hives with flat covers, and, besides, even if we used such there would not be corners enough on the cover to answer our purpose. Some one else suggests that you carry a little blank book with a page for each colony, and, as you finish work at the hive, "jot down its condition." This may do for the man with a dozen colonies; but life is too short to write out the condition of each hive; and, too, suppose a colony across the yard swarms—just think of turning over the leaves to find the place, and especially those that are stuck together with honey and propolis!

I might mention one more. Some write it on a slip of wood and drop it inside the

hive, or even tack it on the outside. The objection to this is that you must go clear across the yard to find out in what shape you left a certain colony, or, perhaps, go running all around the place to find an empty hive in which to put a new swarm.

Suppose you take a smooth board, six inches wide by four feet long. This will easily accommodate 125 colonies for a whole season. It is taken for granted that the hives are numbered. Next number the board; and it is also advisable that the board be ruled to prevent any possibility of mistakes, for they are liable to be costly. Many, no doubt, wonder how the record for a colony of bees is to be kept for a whole season in a space  $\frac{1}{2}$  inch wide by six inches long, and this is, indeed, very important. It is done by a system of shorthand. This must, of course, be varied by each person to meet his own needs.

Here are a few lines from one of our boards for the year 1904 that will give an idea of how the method is carried out.

1. C (-6/13)  $\square$  6/21 (B7/21) 0.

The first thing in the spring, as soon as we are able to look over the bees, we look up the queens and clip their wings where necessary. The first record to go on the board, then, is the age of the queen. Suppose that we find her wings have never been clipped. We then place a C after the number of the hive. If her wings are clipped we look on the board for the season before, and see how old she is. If she was raised in the season of 1902 the C would have a line drawn across it. If raised the season before that, there would be two lines, and we should know that she was a fit subject for removal. (-6/13) shows that, on the 13th of June, eggs were found in the queen-cells. The parenthesis is used simply to prevent its becoming mixed with what goes before or after. If a larva had been found instead of an egg there would have been two lines before the 6; and if sealed queen-cells, three lines. When we came to this colony eight days later the condition was such as to warrant the removal of the queen. When this is done it is marked with a square, followed by 6/21. As the queen was still good she was evidently removed with a comb or two of brood, and used to start a nucleus; for, further down on the board, we find the following:

8. N6/21C1.

(This shows that this hive was empty, and that on the 21st of June a new colony was started with the queen from No. 1). The next week we cut out all the queen-cells, and simply drew a diagonal line through the square (not shown). When the new queen was introduced we drew a diagonal / the other way. Later we found that, for some reason, the queen was not accepted, so we gave them a comb of brood from some other hive, allowing them to raise a queen to suit themselves. This was marked (B7/21). When we found eggs showing that a young queen was laying we marked it 0.

Down further we will look at another line.

13. C. (F7/7)  $\square$  7/7 (C6/22) (7/7)  $\times$  7/24.

The interpretation of this is as follows:

On the 7th of July we shook this swarm on to foundation. In the course of an hour or two we discovered that, in the operation, the queen had been lost or killed, so we marked them queenless. Some time during the day we removed a queen (that had been raised earlier in the spring, and was clipped June 22d), from some other hive and introduced her to No. 13. 7/24 signifies that, on the 24th, the colony was all right.

Take another line.

75. N. V. 6/13 ( $\square$  7/7).

This shows a new swarm with a virgin queen, June 13; queen removed July 7, etc.

From these few examples a general idea can be obtained of the methods employed in this system, and each person must vary and change the signs to meet the local conditions and his own methods of caring for the bees.

The board is always at your hand; and if a colony clear across the yard is swarming you can see just the condition in which you left it the week before without moving from your work. The leaves are never getting stuck together with honey or propolis; and, even if it does become sticky, it is an easy matter to wash it. Can any thing be more convenient or simple than this?

Middlebury, Vt.

## A FEEDER ADAPTED ESPECIALLY FOR USE IN THE DANZENBAKER BOTTOM-BOARDS.

BY GEO. W. BABCOCK.

I think I have hit upon an idea in connection with the Danzenbaker bottom-board as a feeder, that is unique.

The Danz. bottom-boards, such as I have, are made in three parts, of uniform size and accurate fit. The only nailing of the bottom-boards by me is one nail as shown at A. The reason for this is so the shrinkage in the bottom can be taken up by sliding the boards together. Since only one board is nailed the other two can easily be removed, and in their place substitute the feeder in question from the back, as shown.

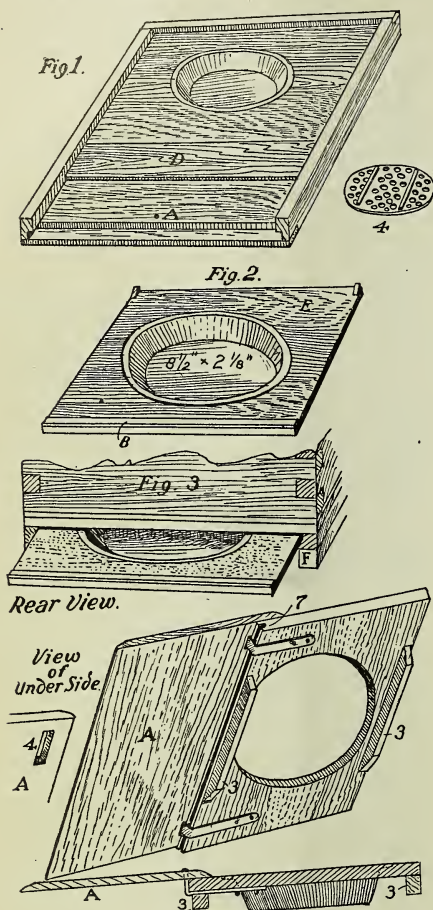
I used, in constructing this feeder,  $\frac{1}{2}$ -inch stuff from orange-crates, which is enough thinner than the regular Danz. floor-board to permit of the top rim of the three-pint basin passing under the end cleat, and an  $\frac{1}{2}$ -inch-thick cleat tacked on at B closes the slot perfectly when the feeder is slid in place.

As shown in sketch, Fig. 1, I added a cleat, D, of the same  $\frac{1}{2}$ -inch material, under which the forward part of feeder-board E slides, thus leaving no opening in the bottom-board when the feeder is drawn forth at the rear to be filled, as shown in Fig. 3. I use a heavy enamel basin, costing 20 cts. here, 10 cts. in Rochester. I have eight of these feeders. I use a waxed float made of  $\frac{1}{8}$ -inch material (wood), Fig. 4.

On one hive, while using this feeder I had



placed a nucleus, which robbers got well started in; but they took no notice of the lower hive, nor did they crawl or fly about the feeder, which can not be said of the Boardman feeder nor the leaky division-board feeder; and, further, my feeder is all inside; and if the syrup is carefully poured in, there is nothing to attract the bees.



In order to have this feeder slide under the hive I had to add a  $1\frac{1}{4}$ -inch strip on both sides of the Danz. bottom-board side rails F, Fig. 3. This enables it to pass clear of the hive-stand, and gives me a winter side (which I am obliged to have) in wintering in my cellar, as the Danz. opening is not enough.

When we leave the capacity of a stimulative feeder, I can't see why we should not use the Miller size. You will see by my Danz. feeder that I can replace it by the regular bottom-boards at any time by simply sliding them in its place.

Clarkson, N. Y.

[The feeder here shown would undoubtedly give good results. One would have to be

a sort of carpenter, however, to rig up something of this nature. An ordinary person would not be able to make a close enough fit so that the slide-board containing the pan would work free without hitching or catching.—Ed.]

## THE NEW PURE-FOOD LAW.

### The Difficulty of Properly Labeling Comb Honey..

BY R. D. CHAPPELL.

I have been reading with much interest your discussion of the pure-food law in regard to honey, and must say that I am on the "fence" when it comes to selling my comb honey for pure white clover, pure basswood, or pure any thing, for that matter. I will try to illustrate the point I wish to make. Just after the close of the white-clover flow the past season I bought some beautiful white comb honey cheap, for the reason that it was not separated, and the sections were soiled, but the combs were very white. I bought it for our own family use, and sold my own, which was in plain sections, and, being built between fences, was nice and straight. Well, when we came to eating the honey I found it badly tintured with honey from the brood-nest, which had been carried up to make more room for the queen. Now, before tasting the above-mentioned honey I should not have hesitated to sell it for pure white-clover honey; but had I done so I would have laid myself liable to prosecution under the new pure-food law.

How are producers of comb honey to know what kind of honey each section contains, without sampling it?

Vassar, Mich.

[Why, friend Chappell, the problem is not so difficult as you apparently think. You probably sell honey in your own locality, or at least within the confines of your own State. You will not forget that the national pure-food law applies only to territorial and interstate business—not to business conducted wholly within the State. The small honey-producer who sells his product will not be likely to be affected; but the shipper—that is, the corporation or individual that has been doing a general mixing business, will necessarily do some interstate business, and because of this he dare not put up any foods or drugs unless the label and contents conform entirely to the provisions of the new law.

But suppose you were to ship your honey out of the State. If you do not put any label on it, so long as it is pure, no matter how many the sources from which it was gathered, you would be in no wise be affected by the law; and we doubt very much whether, if you labeled it "pure clover honey," and there should be a little basswood mixed with it, the officers would make any trouble; but if you label your product "Pure Comb Honey" you will be entirely safe.—Ed.]



## THE UNITED STATES DEPARTMENT OF AGRICULTURE, AGAIN.

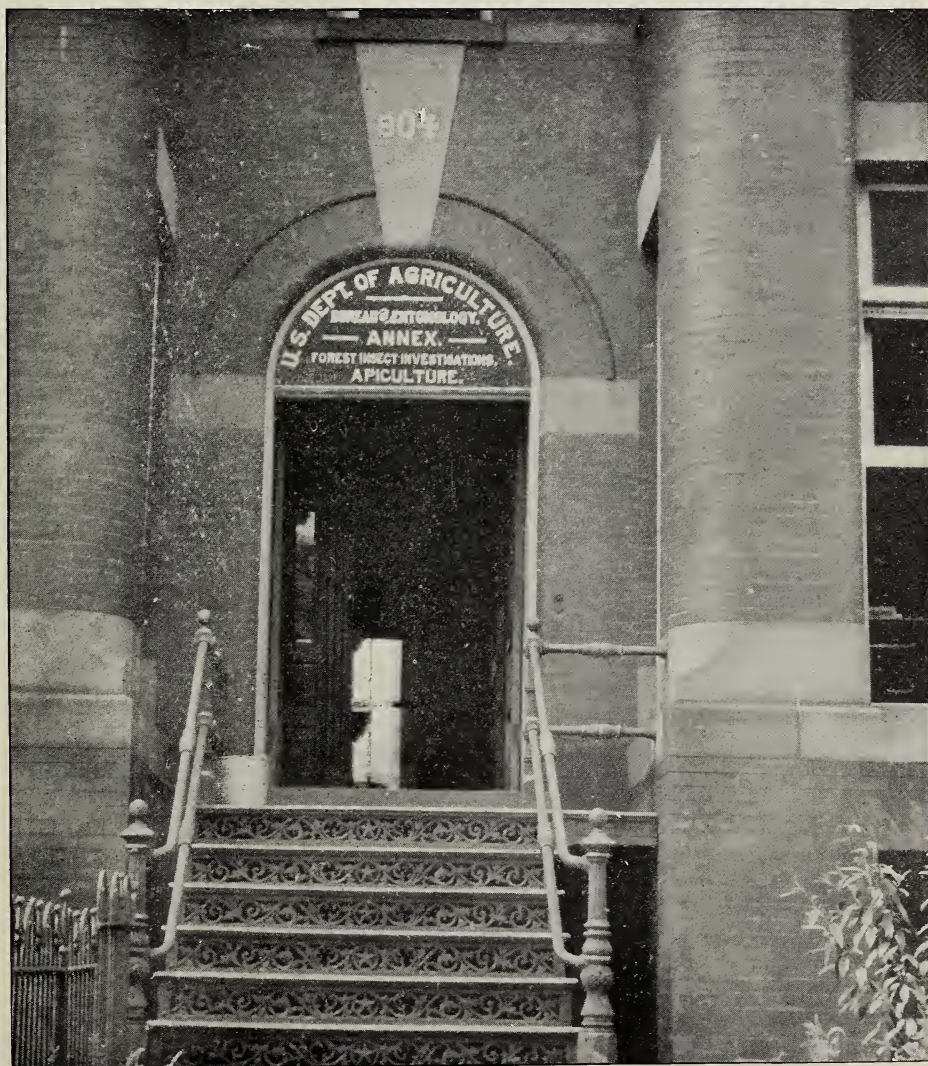
### What it is Doing for the Bee-keeping World.

BY E. R. ROOT.

Shortly following the Jenkintown field-day meeting, near Philadelphia, June 26th, I took a short run down to Washington for the express purpose of seeing with my own eyes what Uncle Sam was doing for bee culture. I have already told about the interest he has taken in disseminating information on the subject of bee diseases; of how he has sent representatives to our various

bee conventions, thus bringing the general government in close touch with the bee-keepers themselves. That this has met with their general approbation everywhere is well known. The time was when our Uncle did not recognize bee culture in any way whatsoever; but now there is quite an appropriation, through the Bureau of Entomology, to defray the expense of several salaried employees, and at the same time maintain one or more government experimental apiaries for the propagation of the new races of bees, and for general experimental work;

It is well known that the Division of Apiculture is in the Bureau of Entomology; and



ENTRANCE TO THE DIVISION OF APICULTURE AT THE BUREAU OF ENTOMOLOGY, WASHINGTON, D. C.

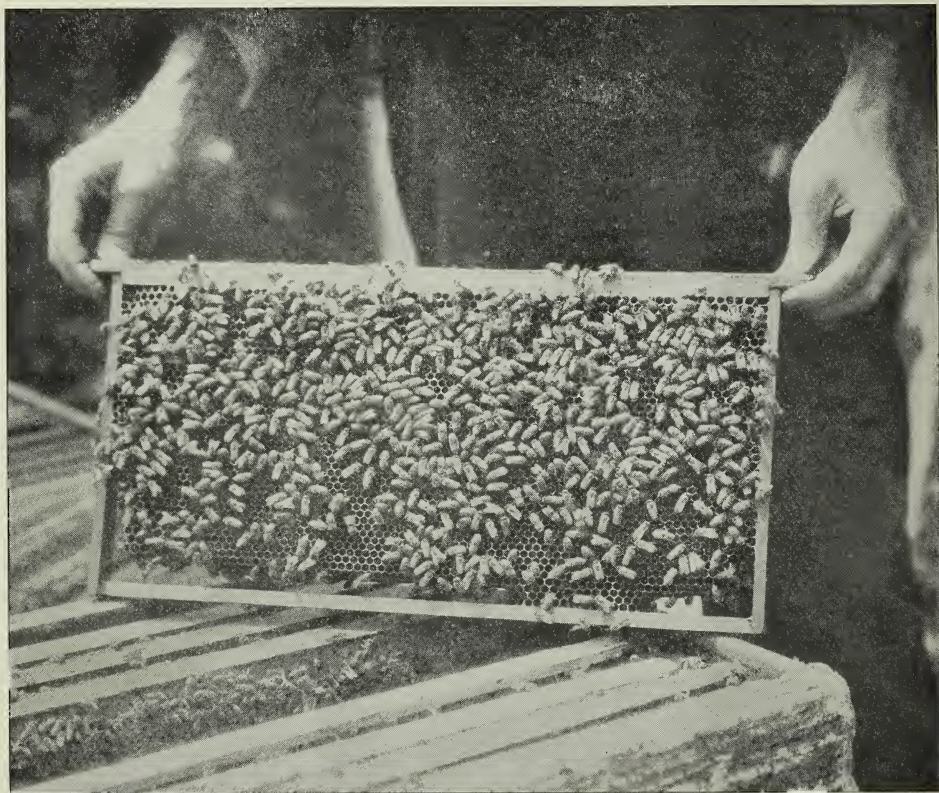


therefore it is directly under the charge of Dr. L. O. Howard, a gentleman who has taken great interest in the general subject of apiculture.

But let us now go over to the Department and see what is being done. On arriving at B St. S. W., we pass along till we come to 904. Here we stop at the Annex of the Bureau of Entomology, and note right over the door in large letters of gold the word "*Apiculture*." The casual passer-by might pay no attention to the word more than to read it; but a bee-editor realizes the great amount of effort and patience that must have been expended to cause the word to have enough

fact that the employees in this Division have a great amount of work on hand. Dr. Phillips, at least, seemed to have laid out enough work for himself to keep four men busy. Every thing was being worked out to a system. Among other things he showed me how he was keeping in touch with certain sections of the country by means of a card index; of how bee-keepers from all over the land were seeking information.

At the time of my visit, he and Dr. White, the Bacteriologist, had been making some investigations on the general subject of bee diseases. The results of these have all since been published—see Dec. 15th issue.



A FRAME OF CAUCASIAN BEES AT THE GOVERNMENT APIARY JUST AFTER THEIR HIVE HAD BEEN BUMPED AND KICKED.

importance attached to it so that it could thus be given a place of honor under the keystone of a government building. My camera caught a view of the entrance, which view is shown herewith.

We ascend two flights of steps or stairs, and are finally ushered into the offices of the Division of Apiculture. Here we met Dr. E. F. Phillips, who was temporarily in charge while Mr. Benton was at the time on his eastern trip through the Orient.

One can not fail to be impressed by the

Notwithstanding Dr. Phillips was very busy at the time, he gave me every facility for learning about the work that was then going on. We went over to the government queen-rearing yard, and there had the pleasure of meeting Mr. Leslie Martin, the apiarist in charge. Here we found several races of bees where the visitor could see them tested to his own satisfaction. Dr. Phillips and his assistant had made a careful study of the general subject of queen-rearing, and it was easy to see that the most up-to-date





LESLIE MARTIN, AT GOVERNMENT APIARY, HOLDING A FRAME OF CAUCASIANS.



WAX MODELS (BY AUZOUX) OF HONEY-BEES, THE MODELS ENLARGED APPROXIMATELY TEN TIMES, EXHIBITED IN THE BUREAU OF ENTOMOLOGY, WASHINGTON, D. C.

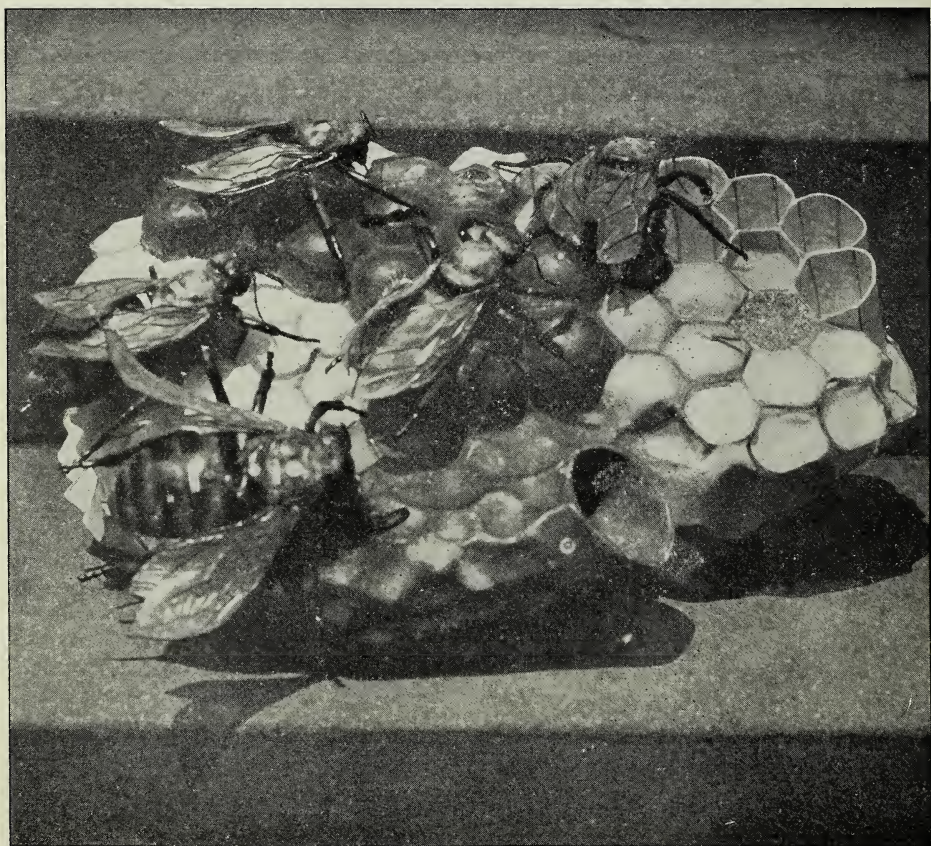


methods known to the art were there being tested. The bulletin by Dr. Phillips, on queen-rearing, based on this work bears testimony to the same point.

I took a few snapshots showing Mr. Martin in the act of handling the hives; but I was particularly interested in looking at the Caucasians, as I believe most of the visitors are. After Mr. Martin opened the hive I casually remarked that I supposed he could do almost anything with the bees except actually to kick and pound the hives. Quite to my surprise he gave several of the Caucasian colonies a good bumping with his feet, and he actually jarred two or three of the hives a little off their stands. He explained that he did not ordinarily do this; but inasmuch as I had tentatively given him the challenge he felt inclined to accept it. The two pictures of the frames of bees were taken shortly after this rough treatment, and yet there was no resentment, but, on the contrary, the bees were nicely disposed over the frames, apparently caring little for what had been done; for, during the time, no smoke or veils had been used.

There was, I believe, one colony of Banat bees and several of Carniolans. In this connection I ought to add that the government strain of these bees (Carniolans) were very gentle.

After inspecting the government queen-rearing operations, Dr. Phillips kindly piloted me over to one of their buildings (a museum, I think) where he introduced me to Mr. Rolla P. Curry, in charge. There was an exhibit there, in which Dr. Phillips thought I would be very much interested. It was nothing more nor less than some wax models of honey-bees and a honey-comb, enlarged to some five or six inches in length, with combs to correspond. These specimens were made by the celebrated model-maker Auzoux, who, it appears, has made many other models of various insects for the Bureau of Entomology. Notwithstanding that these models of bees were kept in a glass case not easy of access for the purpose of photographing, Mr. Curry very kindly consented to remove the glass, at no little work, and have the models removed and set outside of the building. They were placed on the steps of the

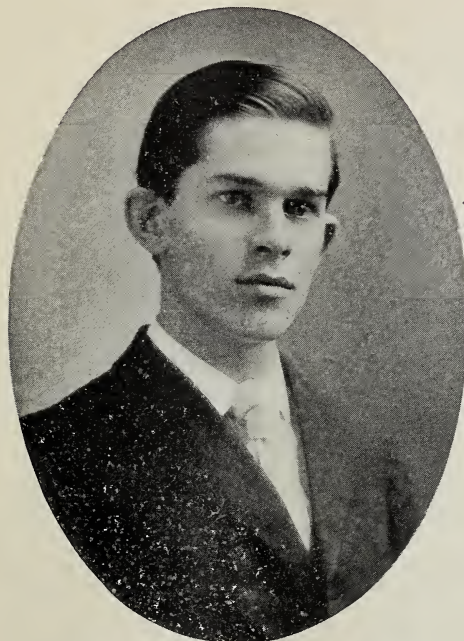


WAX MODELS OF HONEY-BEES AND HONEY-COMB, ENLARGED TEN TIMES (BY AUZOUX, THE CELEBRATED FRENCH MODEL-MAKER), ON EXHIBITION IN THE BUREAU OF ENTOMOLOGY, WASHINGTON, D. C.



entrance, where I secured a number of photos, two of which are here reproduced.

It will be observed that these models can be dissected, showing the entire anatomical



LESLIE MARTIN, GOVERNMENT APIARIST.

structure. To the student of anatomy they are very interesting, and give another evidence of the interest taken by our dear old Uncle Sam in bee culture. Such models, though perhaps not perfect structurally, were executed with such marvelous ingenuity and care that they must have cost a large sum of money, and yet here they are for the inspection of every visitor who desires to see them. If it were not so expensive it would be interesting, and profitable as well, to have specimens of these bee manikins, so to speak, at our conventions, where the complete anatomy of the bee could be very clearly shown.

I may say in this connection that there were many other enlarged specimens of insects, injurious as well as useful, where the student can study them to his heart's content. These collectively form a very useful exhibit for the Bureau of Entomology.

The bees and the piece of comb stood out on the stone steps for the purpose of photographing. The depth of the step will give some idea of their real size. In the other engraving, showing the bees dissected, the back of the bee has been removed, showing the conformation of the muscles. The model is ingeniously hooked together so that it can be easily dissected to show any particular portion of bee anatomy.

## BEE-KEEPING IN CUBA.

**The Island Not the Worst Place in the World; Why One Statement will Not Hold True for All Parts.**

BY ROBERT M. M'MURDO.

A good deal is written but little is known about Cuba, in any shape or form; and although I have traveled a great deal here I would not dare to write anything about bee-keeping outside of this vicinity; but I should like to say a few words for *this* part of the country.

It is undoubtedly a great bee country, as the shipments of honey and wax every year from Manzanito will show; and nearly all *that* is made by the natives in log hives, which, as you all know, admit of no handling, other than hiving swarms and taking the honey and wax, which is done by driving the bees back from one end and cutting out the honey, often some brood with it, and all is squeezed out by hand. They say the wax brings more than the honey, and that they average a dollar or more per hive. I send you a picture of a Cuban and his apiary. He had about 300 hives when that was taken, and made over \$300 out of them that year.

This country is flat, and not as pretty as it is further back toward the mountains; but it is perfectly healthy, and the mosquitoes and fleas bother us very little; and for seven or eight months we do not have to use a net over our bed at night. If you have a plank floor, and keep the dogs out, the fleas will not bother you much.

As for those bugs that get into your feet, I have heard of them but I never saw any. I always thought that, if one kept his feet clean, they would never bother him. But one has to keep a lookout for scorpions. Their sting is pretty bad, and the pain lasts for about three hours; but after that it seems to have little effect, and did not swell much on the two people I have seen stung. They like to stay in dark corners and catch cockroaches, but occasionally will come out and get into your shoe. They make a curious zipping noise when disturbed, and I do not believe they will sting unless you touch them. A curious thing about them is, they carry their young about on their back.

The lizards are perfectly harmless, and so are the snakes, for that matter, except that they will kill a chicken occasionally—especially the “majas.” They will go up a tree (where the chickens roost) after them. They grow ten to twelve feet long, but are easy to kill, for they move slowly. Their skin is very pretty. It is one of the boasts of the natives that they have no venomous reptiles on the island.

There are certainly lots of ants here, of all kinds, and most of them sting or bite. They have never bothered my bees, though, and have entered the hive only when there were no bees there.

I have my hives up on good-sized stakes, eight or ten inches off the ground, and have plantain and orange trees for shade. I am

sure the shed is the right thing, only more expensive; but instead of having a metal or paper roof I would use "guano." It is what the natives all use for their houses—the "palmetto palm" leaf. It lasts very well, and is much cheaper and cooler than any thing else.

Here the bees pick up some honey nearly all the year round, but have two natural swarming seasons, the spring and fall. These are governed by the rains, which do not come by clockwork, and it does not rain every day when it does come, but, like the rest of Cuba, comes generally in showers, which is one of Cuba's greatest blessings, for, no matter how hard it rains the evening before, you have the beautiful sun next morning to dry things off and cheer you up. It is really seldom we have an all-day rain, so one can get in lots of work.



A NATIVE IN A CUBAN APIARY OF OLD LOG GUMS.

There is no trouble in keeping the bees strong through their natural breeding seasons and main honey-flows, and I do not think one ought to expect to keep them strong all the year; but I noticed that nuclei with young queens would build up right through the winter months, and make their own comb too. The importance of having young queens from the best stock, just as Mr. Alexander and others recommend, can not be overestimated, according to my experience; and I really believe one might require twice a year to advantage—certainly once.

Although I have never practiced feeding I am inclined to think it might be done here to advantage in September. This year I am sure of it, for it was dry, and very little honey came in, and only the strongest worked on foundation.

One ought to run for both comb and ex-

tracted honey here—comb in October, November, and December, and extracted honey and wax the rest of the year. There is quite a good flow in the spring, and some of it is very nice honey, but the honey in June and July is very poor.

If a person does not try to run too many hives and will adapt himself to the conditions of the country, I believe he could make a paying crop of honey in almost any part of this province, and at the same time he need not confine himself to bees entirely. He should certainly have a few cows and start a herd, or some good mares, or start an orange-grove or rubber plantation, or chickens, for that matter. I would not advise any one to grow much corn unless he wants to go to the expense of keeping it. There is no market for it except where no one has any to sell. Just now the storekeepers are paying only

80 cts. a quintal for it, whereas a few weeks ago you could hardly get it for \$2.00, when the poor Cubans did not have any. It won't keep without going to a great deal of trouble, especially the summer corn.

But, though I want to sell out, I would not advise any one having a good home among friends and relations, with good schools to send children to, to come here or to any part of Cuba; but if one has to make a change for any reason at all I am sure no part of the States offers more natural advantages than Cuba does to-day.

The greatest disadvantage the country has is that there are no roads to speak of, and for two or three months every year they are almost impassable; and I doubt if one could use an automobile at any time. The hauling is all done in ox-carts, and the mud never seems to get too bad for them. They get through it somehow.

There are several things that this country is especially adapted to. One of these is the growing of oranges. The woods are just full of wild lemons, or limes, and the Cuban orange grows true to seed; and for sweetness or flavor they can not be surpassed. They grow very fast. There is one orange-tree in the apiary 14 feet high, planted there two years ago, when it was a year old.

#### THE SANITARY CONDITIONS IN CUBA.

I must say a few words about the health of the country, as I have found it agreeing with me better than Albemarle Co., Virginia, and I know there is no healthier place in the States than that. There I often had bad colds; but here I hardly ever have occasion to use a handkerchief, and have bought only half a dozen in the last four years, and they were to use in the States. I feel less listless here than I did there. If this country were not naturally very healthy, all the natives





FIG. 1.—RESIDENCE OF GEO. W. TABLER—A SUGGESTION FOR SELLING HONEY.

would have been dead long ago, as they sleep in crowded quarters, shut up just as tight as possible, drink water out of any stream or mud-hole, and all the slop water is pitched into the middle of the street; and in many of the small towns you will see not only stagnant water but dead cats and dogs in the street. It is only the beautiful sunshine and the fresh pure air blowing constantly over the island that saves the people.

In regard to what Mr. Reiman has to say about Cuba, page 1178, I should like to have a few words. It is certainly interesting reading; but lots of his statements, although they may be true for his part of the island, do not apply to Cuba as a whole, and will give peo-

ple a wrong impression. I get my coal oil, the best, for 30 cts. per gallon. I do not think any one would try to palm off foul-broody bees on a buyer. I am sure there is no foul brood around me.

Cauto, Cuba.

### BEE-KEEPING IN KANSAS.

**A Carpenter Who Does Not Think it Pays to Make His Own Supplies.**

BY GEO. W. TABLER.

I am a carpenter by trade, and do not have much time to work with my bees.

Fig. 1 is my cottage. The sign hanging



FIG. 2.—GEO. W. TABLER IN HIS APIARY.

on the porch is a suggestion how to sell honey, and the flower in the foreground is a Rocky Mountain bee-plant in full bloom.

Fig. 2 is a corner of my apiary. The hives are of my own make, ten-frame Dovetailed; but I do not recommend making them at home unless one is a mechanic, and even then there is nothing saved. The smoker I have in my hand I made myself, and the material cost 90 cts., labor \$2.00, so I would not advise any one to make his own bee supplies.

Great Bend, Kansas.

### DR. DZIERZON.

BY W. K. MORRISON.

Below we give the latest portrait of Dr. Dzierzon, showing how he appeared at the age of 95 years. For this we are indebted to *Bienen-Vater*, one of the foremost if not the chief bee journal of Europe, whose editor is



*Dr. Dzierzon*

—From the *Bienen-Vater*, Austria.

Alois Alfonsus, of Vienna. The decorations on the breast of the venerable gentleman were conferred by various European royalties. The Emperor of Russia conferred on him the order of St. Anne; the Emperor of Austria-Hungary conferred the order of

Francis Joseph; the King of Sweden and Norway, the order of Wasa; the Grand Duke of Hesse, the order of Ludwig; and another by the Archduke John. He, in a sense, earned these decorations by allowing students of bee-keeping from all parts of Europe to come and study at his apiary, many of whom were sent there by the governments of their own country and at their expense.

It is said he led a happy, peaceful, contented life, devoted to his bees, living amid his friends and relatives, by whom he was revered. For many years he had given up church work to live with his brother's family, and with whose youngest son he died, being constantly attended by his nephew's wife, who cared for him as a daughter does for her father, going with him to the bee-keepers' conventions that he might not suffer. To the day of his death he owned many colonies of bees scattered through twelve apiaries.

We gave a general life-history of this remarkable man in our Dec. 1st issue, p. 1508.

### THE CHAMBERS NON-SWARMING DEVICE.

#### The Chute Unnecessary.

BY M. R. KUEHNE.

In reading in *GLEANINGS*, pages 582, 583, the description of the J. E. Chambers non-swarming device I find that I have been working for years back on the very same principle, but have come out in a much easier and simpler way than Mr. Chambers. That chute arrangement is entirely unnecessary, and I think even a detriment to the colony above the brood-nest, inasmuch as it depletes the brood of too many bees at a time when they are sorely needed to give the proper heat to hatch the bees successfully. I make my partition-board somewhat different as follows: On each side of the board I put a strip of common wire cloth, top and bottom, 3 inch, and in the center a  $\frac{1}{2}$ -inch board; at the back of it is a  $\frac{1}{2}$ -inch hole covered by queen-excluding zinc. This allows the heat from the colony below to come up freely to hatch the brood, and at the same time allows an intercommunication through the  $\frac{1}{2}$ -inch zinc, through which they equalize as to numbers fairly well. The partition-board, of course, has a fly-hole at one end, which is turned in an opposite direction from the front fly-hole.

I manipulate the bees that way about three weeks before I expect honey to be gathered freely; and after the young queen in the upper hive begins to lay I take her out, together with enough bees to stay with her, and then remove the partition-board. By this time the harvest is on and the bees will not swarm any way. Of course, one can remove the partition-board without removing the queen, and she will invariably dispatch the old queen below.

I communicated this idea to Mr. Stachel-



hausen some two or three years ago, but he had his doubts about the young queen invariably killing the old one below; but she does, practically. I have had but two cases where the old queen, still reigning supreme, killed the young one. Otherwise I work just as Mr. Chambers does, only I shake enough bees with the old queen to make them contented, just as he works for comb honey; but it works equally well for extracting.

Pomona, Cal.

## THE HIVE QUESTION.

One Deep Body vs. Two or More Shallow Sectional Bodies; Sectional Hives Rightly Managed, the Same as Deep Hives; Mr. Dadant's Article Criticised.

BY J. E. HAND.

[The two articles here given on the same subject, one by J. E. Hand, of Ohio, and the other by another (J. E. Chambers, Texas), in widely separated localities, with very different climatic conditions, show a remarkable agreement all through. They will, therefore, be read by the advocates and opponents of the system with more than ordinary interest. They form about as strong a plea for the double-brood-chamber hive as any thing we have yet read.—ED.]

Mr. Editor:—In your footnotes at the close of Mr. Dadant's article on sectional hives, p. 1115, you say, "We shall be glad to hear from our subscribers, particularly those who use the split-up or double brood-chambers." We don't understand your meaning of the terms "split up." If you refer to those we split up for kindling-wood we will say that *they* were Jumbo hives and not sectional hives. However, if you mean the sectional hive we fail to see the appropriateness of the expression. But as we are subscribers, and also users of the sectional hive, and as Mr. Dadant's article is really a reply to a former article of ours, we will endeavor to meet some of the arguments that he has advanced in opposition to the sectional hive.

In the first place, we do not wish it understood that we are advocates of a shallow frame, except as used in connection with the sectional hive, which admits of manipulation by hives instead of by frames. Mr. Dadant has made the same mistake that every one has, who has ever criticised the sectional hive, in failing to separate these two systems. The change from frame manipulation to hive manipulation is as marked as was the change from the box hive to the movable frame. While we as American bee-keepers can justly point with pride to the Langstroth invention, we should remember that many years have intervened since that time, and much progress has been made along other lines. Are we as bee-keepers to be content to continue along in the same old ruts, or shall we adopt those methods that will lessen our labor, and, by so doing, reduce the cost of honey production?

I agree with Mr. Dadant, that time is money, perhaps never more so than now, and, therefore, labor cuts a greater figure in the cost of honey production than capital. There are thousands of dollars' worth of time wast-

ed every year in the useless handling of frames. I say *useless*, because it *is* useless to handle frames singly, except in rare cases. The system of manipulation by hives will enable the apiarist to care for twice as many colonies of bees with the same amount of labor and time, thus doubling his income from the bees.

Mr. Dadant says, "I can see no chance of handling only hives when hunting for queens, looking for queen-cells, etc." Again, he says, "With the sectional hive we have twice or three times as many frames to handle, proving conclusively by these statements that he does not yet fully understand the workings of this system. Not only do we find queens without removing frames, but *all* queen-cells can quickly be found without even removing the cover.

This rapid manipulation by hives enables the apiarist to work with his bees at a time when it would be impossible to handle frames, on account of robbers. Mr. Dadant esteems it a great privilege to be permitted to build up the brood-chamber by adding one frame at a time, closing up each time with a dummy; and a little further on he says time is money to the honey-producer. It is hard to reconcile these statements.

It is claimed that the queen, in her rounds of egg-laying, when coming to the top and bottom of these shallow frames, will hesitate, lose time, and lay less regularly. These are only theories which fade into thin air in the actual use of these hives. In *no* hive can be found more perfect frames of solid brood than in these very shallow frames. There being no space at the ends of frames, the queen will lay eggs clear out to the ends of the combs. It is further claimed that, with these hives, the brood-chamber is cut up into small sections. While this is true to a certain extent, it must be evident to the thinking apiarist that this space through the center of the hive is a great advantage in many ways, aside from hive manipulation. It permits of the free passage of the queen to all parts of the hive from the center of the hive each and every way through the warmest part of the hive, enabling her to build up her colony during cold and unfavorable weather in early spring. It allows the cluster to contract through the center of the hive during a cold snap, without the loss of bees which are caught on the outside of deep frames, and perish. It permits of the passage of the bees through the center of the hive to reach stores at the other side during extreme cold, when it would be certain death to pass over deep combs. I have had scores of colonies die of starvation on deep combs, simply because they could not move over those deep combs to reach stores in zero weather. It causes the queen of a small colony to establish her brood-nest in the top section of the brood-chamber close to the top of the hive where the heat of the cluster is best conserved, while the cluster in the center of deep combs is further removed from the heat-center, and can not build up so fast in cold and unfavorable weather in early spring.

The queen will confine her egg-laying entirely to the top section of the hive (the lower section being entirely empty), until it is well stocked with brood and bees, when she will go down and quickly fill the lower one. Right here is where the hive manipulation begins. As soon as the weather and other conditions will permit, the apiarist will interchange these sections, placing the top one, that is full of brood and bees, *below*, and the empty one that was below is placed above, again placing the empty combs in the warmest part of the hive. The heat from the brood rising will warm up these empty combs, and the bees will *immediately* begin to move the honey to the top section, and prepare the cells to receive eggs. This placing the empty combs in the warmest part of the hive enables the queen to develop her fertility to a much higher degree than where she is compelled to extend her brood sidewise into a cold part of the hive far removed from the heat center, as is the case with the deep frame.

Mr. Dadant says, "We found in practice that the bees would often desert one of these shallow sections; sometimes it was the lower one. We do not think that he means by this statement that it was really any other than the lower one. We are glad that he mentioned this subject, for this is one of the strong points of the sectional hive—that, if too much room is given, the bees will occupy the top part of the hive, leaving the lower part, which they are unable to cover, and will work right along in the supers, regardless of the room below the brood; whereas, if such room were given at the side of the brood-chamber, as in the Jumbo hive, work in the supers would stop until this space was filled. Instinct tells the bees that it is safer to locate their brood at the top of the hive.

The manipulations of this hive are many. The so-called Alexander method of uniting weak colonies in the spring is as old as the sectional hive, and is one of the manipulations for which this hive is especially adapted. The full-depth hive is not so well suited to this manipulation, and will often result in failure.

It would be far safer to wait until settled warm weather before uniting colonies in full-depth hives. Since *one* queen is capable of laying more eggs in early spring than the bees can cover, nothing *can* be gained by adding *another* hive and queen with only a handful of bees. It is not *queens* that are needed at this time, nor is more room needed so early in the spring. Such a practice is equivalent to dividing your colony in early spring, as soon as it is carried out of the cellar, and is of very doubtful expediency.

Mr. Dadant is right when he says that, the nearer the bees can come to clustering in a solid ball, the better they will winter. The sectional hive not only admits of this the same as the Jumbo, but possesses the additional advantage of a full and free communication of all the bees in the cluster through its center, thus permitting bees in the cluster to circulate outward and inward, thus help-

ing to keep up the heat. This is an advantage not to be lightly passed by.

In the Jumbo hive, although the bees will make an *effort* to cluster in a solid ball, they can not do it, for this ball will be cut up into thin slices, and each of these slices is separated from its neighbor by a solid wall of cold honey. Each slice being entirely shut away from the next one, there can be no circulation of the bees through the cluster, and they must crawl into the cells and burn honey to keep warm.

Which of these brood-chambers, I ask, is "split up" into small sections, Mr. Editor? Perhaps you can answer this question, since you are the one who first coined the expression. I object to this expression as applied to the sectional hive. It *isn't* chopped up; it is simply a deep frame with a bee-space through its center.

[By "splitting up" we meant separating the several sections of a divisible-brood-chamber hive. We did not, as you suppose, coin the phrase, but borrowed it from some one else. The expression is not bad, because it means a rapid separation of the several parts of the hive.—ED.]

## MORE ABOUT SECTIONAL HIVES.

### The Question Really One of Handling Sections Instead of Frames; Ten Sound Arguments in Favor of Sectional Hives.

BY J. E. CHAMBERS.

Mr. Editor:—I see that you have called in Mr. Dadant's testimony as to the relative value of the deep and shallow hives; and while I have a high appreciation of Mr. Dadant's ability and judgment, yet from his own admissions I question very much whether he is competent to do full justice to the shallow-hive part of the discussion; for, according to his own statement, he has had literally no training in the modern manipulations that go to make up the system necessary in the use of shallow hives, nor has he ever used these hives with frames as we have them. At any rate, I think he has failed to comprehend the fact that the same manipulation can not be successfully applied in the case of the two kinds of hives, for in his first objection to the shallow hive he seems to be laboring under the impression that it is necessary to handle frames in order to find queen-cells or make an examination of the brood-nest. Certainly such an idea could not find lodgment in the mind of an expert in the use of the shallow hive; and if Mr. Dadant was not an expert in the use of these hives, why was he called upon to tell us about their shortcomings? Presumably for the reason that he was better acquainted with the virtues of the deep hive than with the shortcomings of the shallow one. However that may be, I shall be compelled to take issue with some of his statements, for I do not believe they are altogether conformable to recognized facts.



First, he states that the use of the Jumbo hive enables the apiarist to enlarge the hive one comb at a time, from the very smallest space that a colony can possibly occupy and keep warm, up to the largest laying capacity of the best queens. He also says that it is useless for us to seek a more gradual increase of space than can be given with such a hive and dummy. Exactly so, Mr. Dadant; and that very fact is with me, and I think with others, a strong argument against your style of hives, for, to quote your own argument, time is money to me, and time is also honey to the bees; and it certainly takes a good deal of time to open a hive five times, each time removing your dummy and slipping a comb down by its side, replacing the dummy and all such coddling. I can accomplish much more with less work by using the shallow hive, for, in the first place, you well know that any sidewise development of a colony is effected very slowly in early spring, and at great loss of both heat and energy. Why this is true is evident enough if you but stop to reason a bit. Heat from a cluster of bees does not pass off sidewise to any appreciable extent, but, instead, ascends naturally, and the bees follow the natural upward tendency of that heat in their development. So true is this with me that I find year after year nearly every colony occupying the five or six combs, extending upward through two and even three of these shallow sections. These are nearly the center combs. Toward spring, when brood-rearing begins, and the sun begins to shine warm on the south end and west side, they gradually move to that side; but on the cold side, development goes forward so slowly that the colony has often reached a condition of full strength before the bees spread out laterally, and take possession of these combs. With your deep hive and system of coddling, when a comb is given no development is noticed until the bees have increased sufficiently to enable them to cover perfectly the cold outside slab that you have given them; for they can not, in your single-story deep hive, get any benefit from the natural heat that arises from the compact cluster; and in this very connection I wish to affirm, Mr. D. to the contrary notwithstanding, that it is not the smallness nor bigness of a hive that protects the bees from the damp and cold, but such protection is secured by the living compact wall of bees, and in a less degree by the position they occupy in the hive. To illustrate, a colony that occupies the two middle sections of a hive composed of four shallow bodies will have the wind greatly broken in force before it reaches them, for it will have to reach them through the combs and bars of the lower hive, and they will also be somewhat removed from the damp floor or bottom-board. Here in the South a colony will winter every time, strong or weak, if it has stores enough; but further north it is different. When a growing colony in the above-described position reaches the top section, all further need of bottom protection is at an end, and I shift the bottom hive to the top to

afford room for greater development. Different from your colony in single-story deep hive, they are compelled to remain exposed to the cold incoming currents of air. True, they may contract a little closer, but that only lessens the amount of breathing-space. There they remain, and wait until enough bees have hatched to cover the cold outside comb before they can enlarge the brood-nest in the least. Now, these are facts, and I think few will question them.

Mr. Dadant's claim, that the deep hive afforded the queen a chance to develop her full fertility, is an old but entirely unproven assertion, for the fact is just this: During early spring, when no eggs are or can be laid outside the cluster, the queen does, after a fashion, make the so-called circle, and why? Simply because the bees cluster in somewhat of a globular form; and as eggs are laid within this cluster only during the cool weather of spring, that circle is a matter of course. However, I deny that this style of egg disposition is maintained throughout the season; on the contrary, as soon as settled warm weather has come, the queen roams through the entire hive, whether composed of three, four, or five sections, and lays at will wherever she finds cells well polished. Many a time I have found cells thus polished, but no eggs; and on examining again in a day or two I have found the queen busy at work, and again in a few days more she would be found in another section of the hive.

Mr. D. affirms that queens in shallow hives hunt a long time for cells to lay in, and likewise declares the queen drops and loses her eggs. Like him, I have seen queens drop eggs, but this was not confined to shallow hives, but is, I assert, very common in all kinds of hives. For the past fifteen years I have kept a few deep hives solely to help me answer people who have read some such arguments as Mr. Dadant puts forth. These hives are 16½×16½, and 12 inches deep; but during all these years not one of these colonies has ever shown the least advantage, either in strength or in yield of honey over those in the shallow hives, and they are much more trouble to handle than the shallow ones. Furthermore, I have kept bees in many kinds of deep hives, but have never found such hives to be in any way superior to the shallow ones, while in many ways they are immeasurably inferior to them.

In conclusion I will mention some of the ways and reasons why deep hives are inferior to the shallow ones. First, because they are much heavier to handle, needing a derrick like those illustrated in the last few issues of GLEANINGS to enable the operator to make an examination of the brood-nest. The shallow hive needs none.

Second, the deep hive has to be manipulated by combs singly, while with a properly constructed shallow hive every necessary manipulation can be done by sections. This enables an apiarist to handle more bees, and thus be able to secure greater crops of honey, and with less heavy lifting and pottering.

Third, when hauling bees, as in migratory

lee-keeping, the shallow hives are superior, and combs never break down as do the deep ones.

Fourth, with deep hives the combs are never built out and attached to the wood all around, as is generally true with the shallow hives and frames; and I think it must be clear to any logical mind that a hive that does not accomplish the perfect building and attaching of combs to the wood is deficient in some essentials.

Fifth, without wiring, good combs are an impossibility with deep hives; but with shallow ones, wire is never necessary.

Sixth, foundation hangs nearer the center of the frame, and there is also less danger of breaking down when a large mass of bees get on to it when drawing it out.

Seventh, shallow combs stand the strain of heavy work, when extracting, much better than do deep ones even when wired.

Eighth, shallow combs are much easier to uncap. If a man will take a look at the way Coggs shall is holding a L. frame to uncup it, at the field trials at Jenkintown, Pa., then witness the ease and rapidity with which even your humble servant uncups the shallow combs, without even moving or changing the position of the comb, he will not be at a loss to understand why some of us, at least, appreciate the shallow hive and frame. In the illustration spoken of, Mr. Coggs shall holds the frame nearly under his arm. With shallow combs I stand the comb on the end-bar, with the bottom-bar slanting slightly toward me, and slice down the right side, then, using the reverse edge of the knife, I cut down the left side smoothly, rapidly, and without once changing the position of knife or comb. But can you do it with deep combs? I think not.

Ninth, it is almost impossible to free deep combs of bees without shaking and brushing them. Shallow combs and supers are easily freed entire.

Tenth, shallow hives can always be converted into either a small hive for comb honey or a big one for extracted honey, and at a moment's notice too.

Lest some one be fool enough to argue, as did a party once before, that I had mixed demerits of combs and hives, I will state that I do not know of a demerit of one that is not inseparable from the other; for combs of a certain depth have to be used in hives of a like depth. Now, Mr. Editor, is it not a fact that every great manufacturer has fought against shallow hives, and that every one has been literally compelled to adopt a shallow hive, the Root Co. last? and why was this unless, as I suspect, that the so-called standard hive did not meet all the exacting requirements of modern bee-keeping?

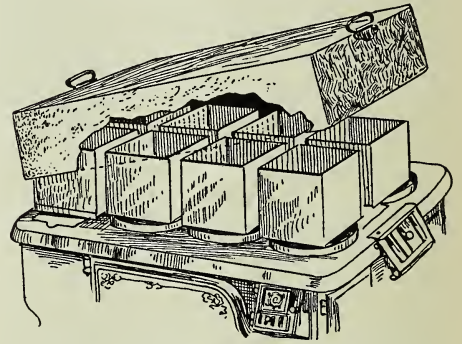
Vigo, Tex.

## LIQUEFYING HONEY ON A COOK-STOVE.

Home-made Melting-tanks at a Cost of Only a Few Cents.

BY C. W. DAYTON.

*Mr. Root:*—You gave so many interesting pictures in the last two issues that I came near forgetting to read the articles. Although there have appeared descriptions and pictures of several honey-heating devices, there was none which seemed to hit my case so well as the plan I am already using; and as I belong to the list of small producers—that is, producers of from two to ten tons, I will send you a rough draft of my outfit for melting honey after it has once become granulated solid. If we have a trade in the middle of winter, or the following spring when



consumers are slacking off from their pork-and-beef diet, and before strawberries, currants, or other fruits arrive, it is advantageous to have a quantity of honey left over to supply such demand; and it also keeps them in remembrance of the good taste; so that they will look forward to satisfy further their taste from the new crop.

In the illustration six square five-gallon coal-oil or honey cans are shown, with their tops cut off so that a part about 10 inches in depth remains. They will hold about 35 pounds of honey apiece conveniently. I usually pay 5 cents each for coal-oil cans; and when the top is removed so that we can get at the inside they are easily cleaned. The large pan to cover all the cans is what I call the hood. This comes down and rests on the stove all around to confine the heat, as will be easily understood. Under the cans will be seen coils of stout hoop or band iron,  $\frac{3}{4}$  or 1 inch wide for the cans to rest upon so as not to come in direct contact with the stove. Over the reservoir of the stove none of these are needed.

Now as to results: The eight receptacles will melt about 200 pounds in three hours—about enough to fill 60 quart jars, and that is about all I care to deliver in a single day—that is, to private houses. If they went to dealers, by the dozen, I should need more; but I do not put much on dealers' shelves in winter or spring, as they sell so slowly and

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SOME one advertises honey-cakes made in Denmark, in the *British Bee Journal*. Moreover, he says they will keep any length of time. There is nothing rotten in Denmark.



are so liable to granulate again. But even for such a trade, two or three meltings would suffice. The honey being put into several receptacles, leaving spaces for the hot air to circulate around or between, greatly hastens the operation above what can be accomplished in a single large tank. About every ten minutes the honey should be stirred so as to mix the melted and unmelted, and this doubles the rapidity of the job; and it can be melted this way without heating it above 100 degrees. The less honey is heated, the better.

Often I melt a batch and put it into cans during the evening. Rainy or cold days can be nicely utilized this way; and the women folks are usually glad to have their fire kept in good order—that is, where wood is used. The housewife can bake without interference with my honey-dishes; and if I leave one dish out she can put on a kettle of meat or vegetables to boil; and ironing clothes can be carried on by using one or two spaces and raising the hood when putting in or taking out the irons; and during it all I get considerable time to read a bee journal besides digging out the candied honey, attending to it while on the stove, and pouring it into jars. I put it into jars while warm. It is made somewhat thicker by this heating, and when it becomes cold it is very thick. The air-bubbles rise then more readily, leaving the jars very bright and sparkling. So you see there is quite a round of economy connected with this outfit. The outfit shown is such a one as I have. If the stove were smaller I would use fewer dishes of honey on it, and make the hood to correspond. I have used a single can for melting beeswax, making a hood for that.

Chatsworth, Cal.

[The scheme here shown of utilizing second-hand square cans that almost every bee-keeper has around home is most excellent. In fact, there is a great variety of useful articles that can be made out of such cans. For instance, by attaching a wire bail to the opposite sides of one of these cans from which the top has been cut off we get a first-class pail. By cutting a can horizontally or vertically through the middle we get two pans. One set will be oblong and the other square. One of the former, when placed on an oil-stove, would make an excellent heating-pan for honey-knives during extracting. Such pans also would come handy for wash-basins at out-yards, and if they should be stolen there would be no great loss. They could be used for cooking and baking at out-yards, up in the mountains, or out on the plains, by bee-keepers who are "baching it," and there are many such.

The melting-tank idea here shown is only one of the many uses to which these honey-containers can be put. Very often bee-keepers pay a good price for special apparatus (and any thing special always costs), when the common article around home, by a little ingenuity, can be used almost as well, and at very little cost. A dollar saved is a dollar earned —ED.]

## A PLEA FOR CHUNK HONEY.

Sell More Honey by Giving Your Customers What they Want.

BY W. T. DAVISON.

There are three ways of getting honey from bees: First, by using shallow extracting-frames and running for chunk honey; second, by running for section honey; third, by running for extracted honey.

My aim is to use all three of these methods of producing honey, for by doing so I shall be able to sell more honey than ever before. I have customers who don't want chunk honey, because it granulates, and is hard to melt. They want section honey because it doesn't granulate as a rule, and looks much nicer to them. Others want the chunk honey because they generally get more honey for the same money, and they get a good friction-top brick that can be used by any family, and can be carried or hauled any way; and if it turns over, the honey is not hurt. Then a good many people don't want comb honey of any kind. They want extracted. I am setting the example of using extracted honey instead of molasses, and some of my customers seem inclined to follow the same example. My extracted-honey trade is as good as or better than the chunk or section trade.

There are all kinds of people who want all kinds of honey.

Any man can get more chunk honey than he can section honey, and it sells here at exactly the same price; but to please all I must have section honey along. I can get more honey in sections by using those extracting-frames to coax the bees into the supers. I sometimes have a few colonies that are a little weak, and they will not work in the supers at all, but will fill the brood-chamber full of honey and crowd the queen almost clear out by having an extractor to use on these colonies. I get some honey anyhow; and when I empty the combs the bees will go to work. Sometimes some of my shallowest frames have dark or damaged combs. I just extract those combs and put nothing in the chunk honey but first-class honey with nice combs; then when you put your chunk honey in friction-top buckets in nice shape, pour in extracted until the combs are covered.

Velpen, Ind.

[It is probably true that many of our honey-producers, especially those who dispose of their product in their own locality, do not cater enough to a certain trade that would take very kindly to chunk honey or "bulk honey," as it is called in Texas. Where a bee-keeper is well known he would have no difficulty in disposing of his product in that form. It is more suggestive of the honey of the old days on the farm; and if the mind of the consumer can be disabused of the notion that such honey is a mixture of glucose, with pieces of dry combs swimming in it, he will probably take it in preference to honey in any other form. One difficulty with comb

honey is that every section, in order to get a good price, must be nearly perfect; but in the production of chunk honey the problem is comparatively simple—even simpler than the production of extracted honey. No matter how uneven the comb or the cappings it would all pass as first grade. No special comb-honey appliances will be required. The only requisite is good new combs of a flaky whiteness and a good grade of honey. Our correspondent makes some good points, and we hope our readers will give them careful consideration.—Ed.]

## NEW YORK STATE 'BEE-KEEPERS' CONVENTION.

Reported by D. Everett Lyon, Correspondent for Gleanings.

The New York State bee-keepers' convention met at Geneva, N. Y., Dec. 18 and 19. The forenoon of the first day was devoted to the annual business meeting of the Ontario County Bee-keepers' Society. The weather was ideal, which should have brought out a much larger representation than was present. Owing to the unexpected absence of one or two of the speakers, the regular program was not fully carried out.

Nevertheless a very interesting session was held, and a profitable discussion of important phases of bee-keeping was carried on.

According to the reports of the foul-brood inspectors, there was considerable of the disease present in certain parts of the State; but so thorough has been the inspection that what disease exists is under absolute control. Let it be said to the credit of New York State that a more intelligent and thorough corps of inspectors does not exist.

Mr. Charles Stewart read a very interesting syllabus of reports from the inspectors from other States, embodying ideas for a foul-brood law that shall be the same in all States.

Mr. West gave a very instructive talk on the uses of a cell-protector.

The question of wintering, and selling honey, came in for a good part of the discussions.

The roll-call of the delegates to the New York State bee-keepers' convention that followed showed that 36 delegates were present.

Mr. W. F. Marks, of Clifton Springs, on ballot received 34 votes and was elected to the office of president.

## ANNUAL MEETING OF THE WORCESTER COUNTY, MASS., BEE-KEEPERS' ASSOCIATION.

BY A. H. ESTABROOK.

The seventh annual meeting of the Worcester County Bee-keepers' Association was called to order Saturday, Jan. 12, 1907, in Horticultural Hall, Worcester, at 2:30 p. m., by Pres. Burton Gates. After brief reports the following officers were elected:

President, Burton Gates, of Worcester; Vice-president, F. H. Drake, East Brookfield;

Second Vice-president, Charles Goodell, Worcester; Secretary and Treasurer, Arthur H. Estabrook, Leicester.

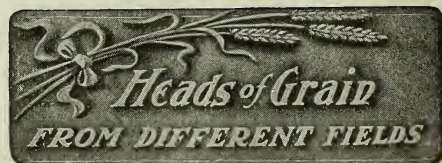
Considering the weather, which was the worst for more than a week, there was a very large attendance, there being present nearly forty bee-keepers.

Particular attention was paid the status of bee disease in this State. A copy of the proposed bill for the State of Connecticut, for protective legislation against bee-disease, was at hand and discussed. Not a little favor of inspection in Massachusetts was manifest. The secretary was directed to correspond with the Massachusetts Bee-keepers' Society and see what steps should be taken. Further details of the status of disease, and the feeling toward inspection, are desired.

The hope was expressed that inspection would not only reduce the diseases of the State, but that it would do much to elevate the bee-keeping methods and do away with the primitive box hives now not a little used in this State.

It was voted to hold on the 9th or 16th of February, according to the convenience of the speakers, an all-day convention and institute with the State Board of Agriculture. The full program and exact date can be learned from the secretary. There will also be a banquet at noon. Every one is invited to attend the meeting and the banquet (the price of which will be 50 cents). All sorts of implements, of inventions, and the products of bees are solicited. Table space will be furnished. The gathering, as last year, will bring together several hundred of the representative bee-keepers of New England. You can not afford to miss it.

Clark University, Worcester, Mass.



GOVERNMENT PUBLICATIONS ON APICULTURE, ETC.

A mistaken idea seems to have gained currency among those making application for government publications; namely, that the authors of publications should be addressed personally, whereas all requests for such publications as are distributed free by the Department of Agriculture should be addressed to the Honorable Secretary of Agriculture, or, in case of special publications, to the chief of the bureau under whose direction the publication was prepared. Those apicultural bulletins which may be distributed free can be obtained by addressing letters: *Bureau of Entomology*, adding the words *Apiculture*, and also *United States Department of Agriculture*. Publications to which a price has been



attached should be obtained directly from the Superintendent of Documents, Government Printing Office, Washington, D. C.

FRANK BENTON.

Washington, D. C., Jan. 3.

FEEDING BEES; WHAT QUALITY AND QUANTITY OF SUGAR SYRUP IS NECESSARY FOR WINTER?

I have seen in GLEANINGS many times that it was better and cheaper to extract the honey and feed sugar; but I do not think I have ever seen any answer to the following questions:

1. If 20 lbs. of sugar be dissolved in water, and then evaporated to the thickness of honey (11 lbs. to the gallon), how much will the whole weigh?

2. How many pounds of sugar will be needed if fed as rapidly as possible to give a swarm 20 lbs. of sealed stores?

3. What proportion of water should be used for this purpose?

4. Should any honey or any thing else be added? if so, how much?

BENNET C. WHITNEY.

Plainfield, N. J.

[1. 25 lbs.

2. Depends on circumstances, but 25 lbs. would be safe.

3. If fed early, feed may be thin; that is, as much water as sugar and often more. Later it has to be thicker, as the bees may not get a chance to evaporate it.

4. No. Some recommend tartaric acid to help "invert" it. You can save a cent a pound if you buy West Indian sugar in yellow crystals. It may be purchased in New York.—ED.]

WHY QUEEN-CELLS WERE CONTINUALLY RAISED; THREE REPLIES TO THE QUESTION ASKED BY HARRY BASSETT, PAGE 1377.

I notice in GLEANINGS, Nov. 1, an article from Henry Bassett, asking for an explanation "why the bees started queen-cells when he gave them a frame of brood before the young queens began laying." It has been my experience for 25 years that, if you give to a colony having a virgin queen a frame of brood containing eggs they will kill the virgin and start cells. Give all the brood and eggs you like *before* the virgin hatches, but *no* more until she is *mated*.

Montgomery, Ala.

D. R. KEYES.

REPLY NO. 2.

It is likely that Mr. Bassett gave eggs and larvæ to the colony with the young virgin queen, so they killed her and started cells every time. I had the same experience several times when I was new in the business. Generally speaking, it is safest for the *average* bee-keeper not to open a hive which has in it a young virgin queen. Wait until she is ten or fifteen days old. She is then probably laying; if so, you can safely give eggs, larvæ, and sealed brood, but better is hatching brood only. If you feel that you *must* build up a nucleus or colony which has a

young virgin, give them only sealed and hatching brood.

I write this because I have known so many good young virgin queens to be killed because of giving the colony eggs and larvæ.

Reading, Pa.

W. D. ACHORD.

REPLY NO. 3.

Mr. Bassett's case of loss of queens, page 1377, is nothing strange if he gave them brood before his young queens began to lay, as I take it he did from what he says. I supposed everybody knew that bees with a virgin queen will always start new cells if given eggs or brood, and the virgin will turn up missing. I had the same thing happen dozens of times before I learned the trick. Don't give the brood until the young queen lays, then you can give as much as you like. Of course, this means unsealed brood of suitable age for rearing queens. Combs of *all* sealed brood can be given without harm at any time. Why this is the case with queenless bees and not with bees that have just cast a swarm has been a question that has puzzled me more or less; but I have reason to think I have learned the *why* of the case.

Marion, N. Y.

J. A. CRANE.

WIRE-CLOTH SEPARATORS; MORE PROPOLIS IN THE SECTIONS.

I have given the wire-cloth supers a thorough test, both by having half of the super Danzenbaker and half wire cloth, and also the wire-cloth super alone. All of my Danzenbaker sections are salable, with the exception of possibly three or four per cent, so far as having bee-bread stored in them, while 75 per cent or more of the wire cloth are peppered with bee-bread. The worst sections had from 10 to 20 cells filled.

Nearly all the sections were filled too full for shipping; that is, about  $\frac{1}{4}$  inch more than flush. Now, the above is not written to condemn them but simply to have you know facts. I am satisfied that the Danzenbaker separator can be used in place of the wire cloth, and I don't know why that should not produce Danzenbaker quality. I am so using them, but don't know results.

I certainly feel reluctant to go wholly back to the Danzenbaker in its entirety, as I positively believe there is a compromise that I can not afford to miss. And as for "what I would use if I were to start again," I wish to say that I think he who is not willing to give up the *modus operandi* of yesterday for that of to-day, be it his pet accomplishment or that of others, will, in the near future, lose in the race for honey and the ready cash therefrom.

Clarkson, N. Y.

GEO. W. BABCOCK.

FARMERS' INSTITUTES; WHY DISCUSSIONS ON BEES AND HONEY ARE VALUABLE.

I have noticed at different times in GLEANINGS where you advise bee-men to take advantage of farmers' institutes to spread knowledge of bees and honey. I prepared a paper for beginners in apiculture for an

institute last year, and I may have another paper at the next meeting, on "Honey—its Food and Medicinal Value." I find the institute people willing to listen to discussions on apicultural affairs. FRED A. PARKER.

Lompoc, Cal.

[It is only too true that the general public is painfully ignorant on the subject of bees and honey, and much good can be done by presenting the truth at such meetings of intelligent, up-to-date farmers. Honey will become more of a necessity and less of a luxury when more is known about it, and when fewer people believe that comb honey is manufactured; that our extracted honey of to-day is the same as the strained honey of 1830; that all liquid honey is adulterated because it "turns back to sugar again," etc. Yes, intelligent people believe these things, and more too.]

Then such a paper read at a farmers' institute will nearly always be published, and more good will be done. The one mentioned by our correspondent was published, and a copy of the paper sent us. It was along the right lines, for, though full of suggestions to beginners, it could not help being interesting to any one. And, what is more important, such papers always stimulate the demand for honey.—ED.]

#### BEE-KEEPING IN ALASKA.

April 14 I started from near Beaverton, Oregon, with nine hives of bees. I went on the cars to Seattle, Wash. The combs in one hive broke down, and the bees died on the way to Seattle. The remaining eight hives I took on a steamboat to Seward, Alaska. In one of these the bees starved before I took them out of the warehouse. I opened the remaining seven hives and let the bees have a fly. May 11 I took the bees on a steamboat for Kenai, where we arrived May 13. On May 14 I got a place to set the bees, and opened the hives and let them fly out and work. The seven stands are all in fair condition, and the bees are working nicely on willows, which are in full blossom.

MORRELL E. WARREN.

Kenai, Alaska, May 15.

#### A BEE VEIL AND SHIRT COMBINED.

I am a bee-keeper in a small way. I have always dreaded going to work among my bees, and the consequence has been that I have many times put off from day to day work that I knew ought to be done. I have, till now, been unable to protect my neck from being occasionally stung, and also my thumbs and first fingers where I have cut off the gloves to facilitate handling combs. But I have now perfectly protected my neck, and reduced the stings on my hands to a minimum. I make an overshirt of denim or overall cloth; but instead of fastening it around my neck I continue it up so as to cover my hat-brim like the ordinary veil. The shirt is made to reach the knees, being put on over the head and tied around below the

waist. For seeing, I use a piece of black veiling with meshes as large as can be had without giving passage to bees. This veiling is about 3×5 inches, and immediately below this I have a piece of wire cloth about 4×4, such as is used in screen-doors. This is for ventilation. The gloves have a small piece cut out over the balls of the thumbs and fore fingers so that the exposure is as small as possible. The above may not be new, but I have never known a dress so made. E. M.

Auburn, N. Y.

#### THE ALEXANDER PLAN OF BUILDING UP WEAK COLONIES; USING WIRE CLOTH FOR THE FIRST 48 HOURS.

I tried the Alexander plan of building up weak colonies last spring, on one weak colony—i. e., one very weak and one very strong. Instead of using the queen-excluder between the two colonies the first 48 hours, I used wire cloth; and then when I did put the excluder on, every thing was fine—no fighting, no bees returning to the old stand, nothing but peace and harmony.

I tried the plan on one colony last spring to see how it would work, and was so well pleased with it that I will try it on a larger scale next spring—i. e., if I have any weak colonies. But I will use the screen first.

#### LET EVERY MAN USE THE FRAME HE LIKES BEST.

There has been a whole lot in GLEANINGS about which is the best frame to use, which is the best way to shake bees off frames, etc. What I should like to see is, after you have harvested a fine crop of comb honey, a way to keep the moths out of it. I don't see any need of so much argument as to which frame is the best. If any one wants to use the loose hanging frames, and space them by guess, let him do so; but let him quit writing long articles in their favor. As for me, I know what kind of frame I want to use better than he can tell me. I have never used anything but the self-spacing Hoffman, and I intend to stay with it. JOHN O. HIGHTOWER.

Excelsior Springs, Mo.

#### AN UNFAVORABLE REPORT OF CAUCASIANS, FROM JAMAICA.

I have made a thorough test of the Caucasian bees in several localities, and have found them unsuitable for this climate. Being very gentle, the red ants and other pests destroy them; moreover, they are very poor honey-gatherers. At one of my apiaries I had 50 colonies of them, and during the rains I lost nearly all, while the Italians in the same yard all survived. F. A. HOOPER.

Hope, Jamaica, Aug. 16.

#### FASTENING SUPER FOUNDATION.

I fasten my extra thin foundation with a Daisy foundation-fastener. This year I dipped the edge of each piece in wax to give a better hold. ROBT. T. MONTAGUE.

Christiansburg, Va.





Be still, and know that I am God.—PSALM 46: 10.

When Woolly gave us that wonderful address in the Methodist church, at St. Louis, Mo., a young girl sang a voluntary that has followed me in memory occasionally ever since. As nearly as I can judge it was that old hymn, "My Heavenly Home is Bright and Fair," with variations, in sheet-music form. If any one who was present, or anybody else, can send me the music I should consider it a *very* great favor. I have found it in the books, but neither music nor words are exactly as she sang it. When that great audience was spellbound by her wonderful rendering, she closed with the words, spoken slowly and with great emphasis, "Reconciled to God." The effect was such that these words have followed me sleeping and waking; and whenever they come wafted by heavenly breezes a wonderful peace and joy comes with them that so fills my heart I often burst out aloud, "Thank God that I am finally 'reconciled to God.'"

It was the thought of this, together with the enjoyment and happiness I am now finding with my plants and chickens, that suggested the text, "Be still, and know that I am God." To get my story of to-day well before you, let me go back a little.

About Dec. 1st I wrote brother Shumard to get me about half a dozen hens of some good breed, and one or more sitting hens if possible. Later I reflected that, if he didn't succeed in getting a sitting hen, my plans would all be blocked, and so I purchased a cheap light incubator and packed it in my trunk, and wrote again to Mr. S. to have 50 eggs ready for the incubator when I arrived.

The directions said, "Start a sitting hen, if possible, when you start the incubator, and run it after her pattern as nearly as you can."

When I reached the island, Dec. 17. I found they had one Brown Leghorn sitting hen, but only 41 eggs, and they had kept some of these two or three weeks because the hens didn't lay on account of hot weather. I gave the hen 15 of the eggs and put 26 in the incubator. The hens on the island celebrated the day of my coming by laying 13 more eggs, making 39 in all by the evening of the first day. Then my "studies" commenced. Biddy was inclined to show fight at first; but I patted her on the back and called her "nice old biddy" several times every day, and we finally became *excellent* friends. We both have our own opinions of things, of course, and she has some very *decided* opinions; but we get along very well. When I found her she was out in the woods in a box nailed on

a limb of a cedar-tree. I have told you about putting the box close to the head of my bed, etc. Well, next day I placed her, box and all, under the work-bench near my shop. She made no objection to the change of location, and was there several days, going off for food, etc., all right until I decided to take her out of the box and put her on the dry warm ground. She made a lot of fuss, but finally settled down over the eggs all right, but along in the afternoon she came off repeatedly. As the box was a rickety old thing I had taken it to pieces and put it inside the shop. Finally she came off the nest and began searching around for something. She found the pieces of her old box in the shop, and then came and stood before me and said in actions that spoke *louder* than words, "I want my box back again!"

"Why, you old fussy, you don't either. It will be a great deal better for you and the chickens to be right down on the ground. Go back and sit on your eggs. You belong to me, and you have got to do as I say."

"In one sense I belong to you, but I belong to God first; and what he tells me is beyond all the wise men the world has ever furnished or will furnish. I want the privacy and retirement of my box, and *I will have it!*"

Before I could open my mouth to read to her "the riot act" she hopped up on the work-bench and then went over my four-foot poultry-netting, yelling defiance and rebellion. After scratching my head a little I concluded to follow, and found her in a second nest-box that had been nailed in the same cedar-tree.

"Old lady, you must go back and take care of those eggs."

"Can I have my box?"

"Yes, you can have your old box if nothing else will do."

She went back quietly (or, rather, I carried her back); and when I fixed the pieces of the old box over and around her she seemed tolerably well satisfied; but I soon found there was something lacking. She was more conspicuous than she had been with the box before I demolished it. I fastened a wide board up in front of her, and then she gave her contented "c-r-r-r" that means every thing is all right. Just before hatching-time I thought the long hay in the nest would be a bother to the chicks, and undertook to remove it. This she objected to; and when she grabbed it out of my hands and threw it over her back, and even got off the nest to poke it back in place with her bill, I let her have her own way. On the morning of the 21st day I uttered a shout when I saw eggshells outside the nest. As soon as she saw me she gave me for a greeting that well-known "c-r-r-r" of contentment, and made no objection at all when I attempted to remove them. When, a little later, I saw several pairs of bright peering eyes with little downy heads I gave a bigger shout, and decided then and there that, though God *might* have given the children of men something prettier and handsomer than little chickens,

doubtless God never *did*. Just one more incident before dropping the sitting hen. One evening, when it began to get a little chilly, I gave her nine more chicks from the incubator (she had 18 already). As the poor motherless bits of animated life began to troop toward her she seemed a little inclined to refuse so much responsibility, and, looking down at the little downy heads *already* peeping out from under her wings, she tipped her head on one side and began a low-toned murmur. I, however, lifted up a wing and began pushing them under. At this she began reaching for bits of hay, which she threw over her back as on that other occasion. I caught on and said, "Oh, yes! you mean you want more bed-quilts, do you?" To be *strictly truthful*, she did not say "yes;" but when I gave her quite a bunch of soft grass she proceeded to fix the new babies in very good shape; and when we together got them well bundled up she gave her customary "c-r-r-r" of approval.\*

Do you know, dear reader, that success would give us little or no happiness were there no disappointment and unforeseen obstacles mixed with it? The directions with the incubator said, "Test out the unfertile eggs on the 7th day." As this came on Sunday I came pretty near deciding my eggs were all bad, or that I had spoiled all by my bungling. I have told you how the children helped me out. Well, when the 21st day with the incubator had come and *gone*, and no sign of life, I was a good deal cast down. I went over all my books and found one of them said when the temperature was run low, or a good deal of "cooling" was done, it might take another day. Just before sunset I took another look at the eggs I had turned and cooled for 21 days past. Was it possible that these inanimate objects were soon to spring to life? Was there really some hidden power within that was to burst those shells and let life and beauty come forth? I remembered our recent Sunday-school lessons. Some great writer suggests our Lord came forth from the tomb even *before* the stone was rolled away. He of his own will power "burst the bands of death." While I was watching I heard a little tapping. Disappointment gave place to joy. The joy was all the greater *because* I had been cast down. I soon found the egg that was being chipped, but the chipping stopped. After an hour or two, and no more evidence, I told Mr. Shumard's people I guessed my eggs were all spoiled after all, for the chicks that had started to come out had evidently "died in the shell" through weakness. None of them could give me much hope except Flossie. She declared they always "stopped to rest," and that they sometimes "rested" a long while. Before bedtime my hopes came up again, and I was rewarded by seeing, for the first time in my life, a chicken

come out of the shell. Dear me! It was nothing like what I expected. Instead of being handsome he was about the homeliest object I ever looked on. As soon as it was fairly loose he began in a sort of infirm way to try to clamber over the eggs. After exhausting himself, apparently, in the vain attempt, he would lie down flat, close his eyes, and "rest." I at first supposed he lay down to die; but, "no, sir, 'e." After a brief panting for breath he was up and at it again. No matter how many times he toppled over or found himself head down between the eggs and heels up in the air, after a rest he took up the battle again. I thought first I would sit up and watch until his plumage was dried off; but it took too long. Before daylight I was up again, and with a strong lamp was at my post before the glass of the incubator. I thanked God again when I saw there was a troop of them clambering over the eggs, tumbling full length on the thermometer, so that for about half the time I could not read the temperature. Then, again, they tumbled the thermometer down between the eggs almost as fast as I could put it back.\* I suppose, of course, some better arrangement is made with higher-priced machines. As soon as the chicks are dried off we can remove them from the eggs; but what I should like to know is whether chicks hatched under a hen go through the climbing and resting. Stoddard, in his book the "Egg Farm," puts great emphasis on exercise, and almost claims *sufficient* exercise will banish all ills poultry is heir to. These in my incubator get enough at a very early age, sure. Dear friends, I have watched for the first visible indications of life by holding the egg in a sunbeam that comes through a crack in my shop, and have watched the growth daily until the eighth day, when I could see it no longer. I have watched again, as I have told you, when the chick leaves the shell. I have seen these same chicks, before they were two days old, spring clear up on the mother-hen's back. I have seen them at the same age scratch and wallow in the dirt as their mother does. As I look on in wonder at this marvelous development of muscular strength, and also mental activity, something impels me to stand with uncovered head and listen in mute reverence to the words, "Be still, and know that I am God."

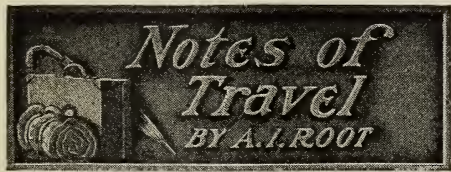
This winter here is very unusual. We have had no rain to speak of for almost 100 days—sunshine always, every day. Some of the chicks, when taken from the incubator, or, rather, from the brooder under it, seemed rather feeble; but this Florida sunshine soon cured them. They will lie down flat in the sun, and close their eyes, and sleep, and then get up and exercise. Their medicine is exactly along the line of Terry's teachings. Exercise, sleep, sunshine, and its accompaniment, outdoor air and proper food (*raw wheat* mostly), and why shouldn't they grow?

\*When the eggs were about half way along I one day dropped a screwdriver in the incubator. Two eggs were broken so some of the white ran out. I mended them with courtplaster, and one of them hatched a nice chicken.

\*Next morning there were bright eyes and downy heads sticking out from between her feathers, almost all over her, and it was not only interesting but comical in the extreme.



Those first hatched are now five days old, and beautiful penciled wing-feathers as hand-some as flowers are now visible. And this reminds me that, right before the window where I write, is a little cloth-covered Florida greenhouse where I have potted plants and cuttings. I am going to take some of the plants in pots over to our Sunday-school tomorrow, and show the children the wonderful root-growth that is taking place, the marvelous activity that is going on under ground out of sight\* (as well as inside the eggs), and then I want to point out that all this is God, who is the very center of all life and activity and power. Shall we not do well to pause occasionally and look up in reverence while we repeat the words of the psalmist, "Be still, and know that I am God"?



#### THE BLACK HILLS MINING INDUSTRY OF SOUTH DAKOTA.

. From Belle Fourche I went to Deadwood. Now, there are mountain streams gushing out of the hills, and coming down the canyons all through the Black Hills, especially in this mountain region. I have told you before how it animates and inspires me to see pure crystal running water, as I listen to the music of "babbling brooks." But, oh dear me! there is not much to attract the eye by the babbling brooks below Deadwood and the city of Lead. You have the "babble" all right, but the water looks more like tar than any thing else, and a poor kind of tar at that. It is more of a dirty red color. Nobody told me, but I presume this is caused by the water being impregnated with the minerals and pulverized rock (from the stamping-mills) that come down from the mountain regions above. Deadwood and Lead are about a mile apart. But, oh what a mile that is! It was dark when I left Deadwood; but as the train was climbing the

mountain laboriously, and twisting continually to the right and then to the left, I kept looking out at the rugged rocks. Pretty soon I began to get puzzled and rattled. I had expected to see only two good-sized cities; but every time we curved into the mountain and came out of a cut a little beyond, I could see a good-sized town flashing its electric lights, etc. Pretty soon I said to a passenger, "My friend, will you please tell me if these towns that come into view are different ones, or are we looking at the same city all the time?"

"Why, my dear sir, it is one and the same city of Deadwood that you see as we twist in and out among the hills. If you will notice, it is a little lower down every time we get a glimpse of it."

And so it was all the way as we approached the city of Lead. Afterward in going over the same scenery by daylight I saw there was a steam railway and an electric railway, and ever so many tram railways for carrying ores from the mines. The combination of railways there is really bewildering. In the outskirts of the city of Lead three railways cross each other on the same spot at different elevations. Away up in the air, suspended on steel derricks, is the loaded train of the great Homestead mine; exactly under it is the elevated train of the Black Hills and Wyoming Railroad; and exactly under *that* is the Deadwood Central train. These ore-trains cross the valleys on tall iron piers, and dump their contents into the very top of or a little above the roof of the great building used as a refinery. Then the ores and refuse minerals go down by gravity until they get to the bottom.

The sound of the stamping-mills that keep up their work day and night, week days and Sunday, is sometimes almost deafening. The ore is pulverized and stirred up with sufficient water to reduce it to a liquid form; then it is carried in pipes to the troughs of mercury where the gold is absorbed or taken up, and the waste black water I have spoken of, or mud, is washed out of the way.

The city of Lead has about 10,000 inhabitants. It is located on the side of a mountain. There are several streets running parallel, pretty nearly level. There are no cross-streets only what you might call a pair of stairs that connect the other streets. For instance, when you are walking on the sidewalk on one particular street you can look down the chimneys in the street below. By driving clear out to the extreme end of the street you can swing around so as to get into the street above.

I wanted to write up something about gold-mining; but the great Homestead, said to be the largest in the world, does not at the present time admit visitors. An army of something like 2000 men are employed here. I could go around in the stamping mills and see them crush the ores, but nobody is permitted to go into the cyanide-plant. Let me explain a little. When I was a jeweler, and did silver plating, we used to dissolve these metals in a solution of cyanide of potassium.

\*One day when I was busy with my plants Mrs. McAuley asked me to come over to the Gulf if I wanted to see a real "school of fishes." I knew expert fishermen could tell at a glance where to plant their nets, but I never understood it. In a little time I saw a dark spot in the water, with fish darting up so there were more or less in the air all the time; and as we got nearer, the water was really black with them, and they were packed so densely that their fins were sticking above the surface all the time. They were slowly moving toward the Pass, or passage through the Keys, into the shallow waters of the Bay. They circled about, yet kept massed together, very much like a swarm of bees, and moved forward at a pace less than a slow walk. Mr. McAuley said there were, without doubt, 10,000 lbs. in that school. How should this great multitude know there was a "Pass," and *where* it was, so they could come miles, almost in a straight line for it?

Gold is supposed to be proof against acids; but this cyanide is a solvent where the acids can not touch it. On another page I have told you about going out of the city to find a lodgingplace. Well, when I stepped off the trolley-car I asked a stranger the way to a hotel. He said it was perhaps a quarter of a mile away, and that I might not find it alone; but he said if I was not in a hurry he would show me the place. I noticed that he was partly crippled; and as he had several packages to carry I offered to assist him. We chatted pleasantly on the way, but it was so dark we could not see each other's face. I bade him good night when we separated, and thought no more about it. I had planned to take, the next morning, a trip up to the summit of Bald Mountain, on an ore-train. When I arrived at the little depot of Blacktail Gulch I found I had something like an hour to spare. By the way, did you ever before hear of such an outlandish name for a town as "Blacktail Gulch"? It seems as if the name alone ought to kill it, even if the saloons, so plentiful there, did not. Well, I suppose the name came from the black dirty water that goes rushing and tumbling down the hills. It is the "tailing" of the great cyanide-plant. Well, while waiting for the train I thought I would go up and get an external view of that cyanide-plant, even if I could not go inside. Before all the doors was the legend, "Positively No Admittance!" Across the broad open doors of the engine-room was a heavy bar of wood, with "No Admittance" on it. I went up and leaned against that bar, and was admiring the beautifully kept engine and other machinery. As the engineer came around I said, "My friend, I will not ask to be admitted, but I suppose the company will not object to my looking over your beautifully kept massive engine as far as I can see it from where I stand." He smiled pleasantly, put out his hand, and said, "Why, stranger, somehow your voice sounds familiar to me. Where have I seen you recently?" And, strangely enough, it seemed to me as if *his* voice sounded familiar. Finally we both burst out laughing. Said he, "Why, you are the chap who helped me carry my bundles up from the depot last night. It is funny if I can not invite you in on my own premises."

I said something about not wishing to break the rules.

"Break the rules?" he said. "Why, if anybody makes any objection I will just tell them you are a friend of mine. I am sure, Mr. Root, *you* will not steal any of our secrets."

Then he took me all over that great plant—one of the largest in the world, and explained as well as he could, so as to get into my comprehension, how they managed to get the gold out of that dirty water. By the way, some of the big round tanks filled with muddy water were big enough not only to hold a good-sized dwelling, but a pretty fair-sized meeting-house, steeple and all. These were the settling-tanks. Machinery stirred up the ground ore and water, and then the

gold, being so much heavier, settled to the bottom. This settling does not get it all, for there are many complicated processes to go through with in order to get the last particle before the dirty water is allowed to get away and run down among the hills from *Blacktail Gulch*.

Twisting and turning up the mountain by daylight was inspiring. In ordinary railway travel the road follows along the canyons so we do not get any such view as is seen by the tourist who climbs to the mountain-top; but *this* ore-train goes almost to the very summit of Bald Mountain. The view from the top, of the city of Terry, S. D., is particularly grand. Terry is handsomer, even if it is smaller, than either Deadwood or Lead. Beautiful native evergreens cover a great part of the mountains near this region, which adds very much to the scenic beauty of those grand Black Hills.

The weather was quite warm and sultry when I took the train for Rapid City, my next stop. Just about dusk I managed to get a seat near an open window, and was greatly enjoying the delicious breezes perfumed by the resinous pine-trees along the railway. While sitting there the conductor touched my shoulder and asked if I would not take a seat with the gentleman across the aisle and let a woman with some children have my place. Now, I shall have to own up that I felt a little cross over being deprived of the fresh air, and of being asked to sit beside a very commonplace-looking man. I was tired and hungry, and I suppose that is one reason why I did not rebuke that selfish spirit; but pretty soon I was ashamed of myself. Let me digress a little. Ever since that incident I told you about ("Blankety Branch"), the man who went about announcing who he was, etc., I have been a little more careful about telling folks who I am unless they particularly inquire. Besides, I did not feel very much in a talking mood as I sat down by that commonplace-looking individual. Pretty soon he said meekly, "Stranger, didn't I hear you say you came from Ohio?"

I asserted.

"What part of Ohio, if I may inquire?"

I told him I lived about thirty miles south of Cleveland.

"Why, then you must be not very far from the Root people at Medina."

At this I began to smile and took a better look at the man. He seemed to be quite an honest-looking old farmer, after all. When I told him that I was one of the Roots—in fact, that I was A. I. Root himself, he slapped his hand on his knee and then extended it to me for a shake. He explained why he was interested in this wise:

"A year ago a swarm of bees lit in one of my apple-trees. I hived them in a box, and then began to inquire of a neighbor something about how to manage them. He said he had some books that would tell me, and he gave me one of your journals to read. I read it all through, Home talks as well as the bee talk, and I liked it so well I asked him for



some more. He gave me perhaps a dozen copies of GLEANINGS. The more I read, the more I was taken up with them; and, to make a long story short, when he told me there were back numbers for several years up in his garret that I might have if I would go after them, I went and got the whole pile. I read those journals off and on all winter, and I said to my wife that I would enjoy meeting that man, and having a talk with him."

There, friends, you have the story of my rebuke. God, in his infinite goodness and mercy, was planning to give me a chance to help a hungering soul, and I was *cross* about it. While I am on this subject let me relate another incident. I was crossing, on a pretty little steamer called the "Sailorboy," from Sturgeon Bay, Wis., to Menominee, Mich. I thought I would keep quiet for once in my life, and not let anybody know who I was unless particularly asked. Of course, I went around and chatted with the people I got acquainted with, for my conscience would trouble me if I did not try to bring sunshine wherever I went, so far as I could consistently. Just as we got in sight of our landingplace a man whom I had been chatting with for some little time said, "Did you say you lived in the northern part of Ohio?"

I nodded.

"May I ask your name?"

When I told him, he put out his hand and said, "Why, bless your heart, Mr. Root, why did you not tell us who you were before?"

I asked him if he was a bee-keeper. "No," he said, "I am not a bee-keeper, and I do

not take your journal; but I read the *Practical Farmer*, and I saw what T. B. Terry said about your coming to his house and making a good square meal on six cents' worth of rolled wheat, dried peaches, and nuts; and, my friend, I think that man Terry is one of the benefactors of the human race. He has not only enabled me to save doctors' bills, but through his teachings I am enjoying better health than I ever did before in my life. I am eating and enjoying the grains, nuts, and fruits, and taking a cold bath every morning of my life, and a good bit of exercise in the open air. I am doing more work, and am of more use to myself and everybody else than I had been for many a long year before I followed his teachings."

Then he went around among the passengers on the boat, saying, "Here is Root, the bee-man, and he never told us who he was until just now."

Now, friends, I am well aware there is such a thing as being in too much of a hurry to tell people who you are and where you live, etc.; but there is also another extreme to be avoided. Jesus said—in fact, he laid the commission right squarely on our shoulders: "Go into all the world and preach the gospel;" and how can we preach the gospel of Jesus Christ, or even the gospel of good health or pure air or anything else, unless we talk to people and get acquainted? Over and over again in traveling I have said to myself, "Now, old fellow, see what you would have missed had you yielded to the temptation to keep still and not tried to interest yourself in other people and their affairs."

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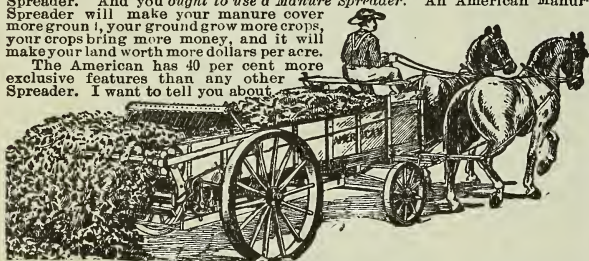
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WANTED.—To exchange, steam-engine about  $\frac{1}{4}$  h.-p. for honey-extractor. J. A. EVANS, Ellwood City, Pa.

WANTED.—A hand-lever printing-press for feed-mill, 2-horse-walk cultivator, and corn-sheller. G. A. LUNDE, Wausau, Wis.

WANTED.—We should like to exchange step and common ladders for bee supplies. GEGAX LADDER WORKS, Archbold, O.

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WANTED.—To let, apiary of over 300 colonies on five years' time. Produced \$6.00 per colony this year. Great opportunity in Colorado. MILLER PRODUCE CO., Timnath, Colo.

WANTED.—I should like to correspond with party that would let his bees on shares in Colorado, Wisconsin, or Nevada. C. S. HURLBUT, Ft. Collins, Col.

WANTED.—Ten-inch foundation-mill for deep-cell heavy brood. OLIVER FOSTER, Boulder, Colo.

WANTED.—To exchange, three colonies bees for 200-egg sure-hatch incubator, used one season. JOHN W. OLSON, Rt. 1, Stratford, Ia.

WANTED.—Refuse from the wax-extractor, or slumgum. State quantity and price. OREL L. HERSHISER, 301 Huntington Ave., Buffalo, N. Y.

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WANTED.—Your name and address if you buy garden seeds. Will send you our beautiful 1907 catalog. E. C. GREEN & SON, Box G, Medina, Ohio.

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WANTED.—20,000 pounds pure clover honey. Send average sample and state best price. J. E. CRANE & SON, Middlebury, Vt.

WANTED.—Fancy white comb honey, also extracted honey in barrels. Send samples, and name best price delivered here. GRIGGS BROS., Toledo, O.

WANTED.—Well-ripened basswood or clover honey. Prompt payment on receipt;  $\frac{3}{4}$  cts. per pound, f. o. b. West Bend. H. C. AHLERS, West Bend, Wis.

WANTED.—In large or small lots, No. 1 white and amber extracted honey in 60-pound cans or barrels. Send sample and quote lowest cash price delivered in Preston. M. V. FACEY, Preston, Fillmore Co., Minn.

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FOR SALE.—Fall honey in 60-lb. cans at 7 cts. per lb. C. E. CROWTHER & SON, N. Kingsville, O.

FOR SALE.—50 cases of comb honey in no-drip cases. LOUIS WERNER, Edwardsville, Ill.

FOR SALE.—Buckwheat honey in 60-lb. cans, at 6c per lb. C. J. BALDRIDGE, Homestead Farm, Kendaia, Seneca Co., N. Y.

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FOR SALE.—Choice extracted clover and basswood honey in 60-pound cans. It was extracted at end of season, and is very thick and well ripened. Sample free. J. F. MOORE, Tiffin, Ohio.

## Bee-keepers' Directory

This department is for the exclusive use of all year-round advertisers. If you have any thing the bee-keeper needs, your card in this department keeps your name always before your prospective customers at half our flat rates. We reserve the right to reject or modify any ad. not eligible to these special rates.

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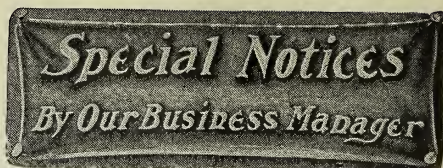
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FOR SALE.—Honey, bees, and queens; cartons at half price, and some other supplies. Bees on Danz and L. frames. Free circular.

QUIRIN-THE-QUEEN-BREEDER, Bellevue, Ohio.



### BEESWAX.

The supply of beeswax in the market seems to be shorter than usual, and the price continues firm. As spring approaches, the supply usually becomes more plentiful. Prices abroad are much easier, and, as a consequence, much wax is being imported from foreign countries. We are paying 30 cts. cash, or 32 in trade, for average wax delivered here or at branches.

### CATALOG FOR 1907.

Our catalog for this year is complete, and is being mailed to the readers of GLEANINGS first. We have also supplied some to our various agencies to furnish on request. Our larger list of names will be reached in due time. Those who have not received a catalog within a few days after receiving this issue of GLEANINGS, and can not wait longer, may have one sent promptly on request by postal. If you receive more than one, hand the extra one to a neighbor interested in bees, and thereby do him and us a favor.

### SIMPLEX JARS.

Those who have started to use this style of jar, and desire to continue, we can furnish the next larger size than those we have been furnishing, at the same price—\$1.10 per case of 2 dozen; 6 cases at \$1.05; 30 cases at \$1.00, shipped direct from factory, while present supply lasts. We still have some of the regular size in Philadelphia and at Mechanic Falls. The larger size mentioned above will hold about 17 to 18 oz. of honey nicely filled. We can still supply the half-pound tumblers, 4 dozen to the case, with corrugated packers and parchment disk for sealing under the covers, at \$1.00 per case; ten-case lots at 95 cents; packed in barrels of 32 dozen each at \$5.00.

### ADVANCING PRICES.

A comparison of prices on metals in the New York market at the close of the year for the past six years shows an advance of 62 per cent on No. 2 foundry iron; 84½ per cent on copper; 80 per cent on tin; 50 per cent on lead; 55 per cent on spelter (zinc); 139 per cent on antimony. Many other commodities have advanced in like proportion. The increased production of gold, which is the standard of value, has been 54 per cent. This goes to show that, as gold becomes more plentiful by increased production, it grows cheaper when exchanged for other articles of which it is the measure of value. In other words, the same weight of lead which, in 1900, could be had for \$4.00 in gold, at the end of 1906 requires \$6.00 in gold to buy it. Careful statistics show that the general average increase in price of all commodities since 1893 has been 42 per cent.

In the face of this general increase in values, which has been especially marked during the past year, there has been almost no increase in the price of bee-keepers' supplies for about four years. This is largely due to decreased general demand because of poor honey crops the past two years. If the present pace of increase in cost of materials continues, and we have any thing like a fair honey crop this season, manufacturers will be compelled to advance prices to maintain a living profit before another season, and even before this season has reached its close. Those who lay in a stock of supplies can rest assured that they are not likely ever again to buy them any cheaper.



### Convention Notices.

The annual meeting of the Wisconsin State Beekeepers' Association will be held in the court-house, city of Madison, Wednesday and Thursday, February 6th and 7th. Reduced rates on all railroads; but if you can not obtain them, ask your agent for full-fare receipt. The question-box will be the main feature, and we want every bee-keeper who has one or more questions of interest to mail them to the secretary, prior to the convention, that they may be properly arranged. Bring choice samples of honey or any thing of interest for a good honey display.

GUS. DITTMER, Secretary, Augusta, Wis.

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Fine select untested queens, \$1;  
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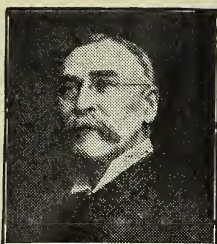
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